A STUDY TO DETERMINE THE STAGE OF DEVELOPMENT AT WHICH FIFTY-THREE PUPILS OF THE SIXTH, SEVENTH, AND EIGHTH GRADES IN 1938, AND THE EIGHTH, NINTH, AND TENTH GRADES IN 1940, OF THE ATLANTA UNIVERSITY LABORATORY SCHOOLS, ATLANTA, GEORGIA, SHOW INDICATIONS OF ACCELERATION OR RETARDATION IN SCHOLASTIC ACHIEVEMENT

A THESIS

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Since the beginning of investigations made in order to determine race status, there has been an extensive discussion as to just where the Negro stands in relation to other races in intelligence, achievement, and many other types of individual and group performance. For this kind of problem, objective tests were used and the results have been accepted as being representative of the true picture of the Negro race, in spite of the many conflicting conditions and circumstances, especially in the South, which in themselves tend to alter the reliability and validity of the test results.[1]

Because this has been done, a large number of studies have been and are still being conducted to determine the status of the Negro in certain traits as compared with Whites and other races, and to find out whether retardation increases as the grade level increases, as stated by Odum.[2] It is to be expected that with the further, more recent development of objective tests, the relaibility and validity of the tests will be higher.

In concluding that the Negro race is inferior to other races, investigators and laymen have assumed that this supposedly unbiased opinion is a just one, that the Negro is inferior in all traits, and that his inferiority is due to native ability.[3]

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[1]Otto Klineberg, Race Differences (New York, 1935), p. 176.

[2]H. W. Odum, Social and Mental Traits of the Negro (New York, 1910), p. 36.

[3]Doxey A. Wilkerson, Journal of Negro Education (Washington, D. C., 1934), p. 465.

However, more recent studies show that it is not due entirely to lack of ability, but that it may be due to a lack of training, inequality of opportunities, inadequacy of facilities, socio-economic conditions, and general unconcern of other majority groups.[4]

Nevertheless, concluding statements as to the inferiority of Negroes, based on old and more recent studies, are still published and used as bases for other generalizations. Public school children were used in most of the investigations conducted in order to determine and compare scholastic achievement, intelligence, and other abilities. Then, with the prevailing problems of poor environment and unequal educational opportunities alleviated to some degree, there should be a chance for a study to determine the educational status of the Negro children who approach the social and economic strata of the average Whites as to scholastic achievement.

With this in mind, the investigator chose the following subject: A study to determine the stage of development at which 53 pupils of the 6th, 7th, and 8th grades in 1938, and of the 8th, 9th, and 10th grades in 1940, respectively, of the Atlanta University Laboratory Schools, Atlanta, Georgia, show indications of acceleration or retardation in scholastic achievement.

Purpose of the Study.-- In this study, because of the pertinence of the problem in our more recent teaching methods and procedures, the investigator attempted to answer the following questions:

1. Do the pupils show signs of acceleration or retardation?

2. To what extent is it found?

3. On what test of the battery is the greatest amount of retardation or acceleration exhibited?

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[4]R. Pintner, "Intelligence Differences Between American Negroes and Whites," Journal of Negro Education (Washington. D. C.. 1934) III. pp. 513-1

4. To what may it be accredited?

5. What are the chances for predicting future development?

Limitations.-- The study was made of only those pupils who were enrolled in the 6th, 7th, and 8th grades in 1938, and in the 8th, 9th, and 10th grades, respectively, in 1940. The data were taken only from the Progressive Achievement Test. The data include the names of the pupils, their chronological ages, the grade norm, the individual scores on each test of the battery: Reading Vocabulary, Reading Comprehension, Arithmetic Reasoning, Arithmetic Fundamentals, and Language, (and the Total). The tests were not administered or scored by the investigator.

The pupils were, on the whole, admitted to the school by invitation and application on the basis of certain existing factors and conditions, and were required to pay tuition fees as in any other private school. No student, under the system of educational management employed in this school, repeats a grade--irrespective of the amount of subject matter mastered. No formal textbooks are used, and the selection of subject matter is initiated, primarily, by the pupils, and secondarily, by the teacher, or both. Formal training in the skills is discontinued after a pupil has completed the work at the laboratory elementary school, but special work is provided for those who are in need of it.

Source of Data,-- All scores were derived directly from the tests of each student for the years 1938 and 1940, with the permission of the President of Atlanta University and the Principal of the Laboratory High School.

CHAPTER II

PREVIOUS STUDIES

Among the studies already conducted in this field is one by Tredgold, who, in his book Mental Hygiene, makes the comment:

> In the normal population, the I. Q. remains fairly comstant. Mental defectives tend to fall toward the end of the school career, probably owing to the fact that mental development ceases at an earlier age.[5]

In this investigation, the problem of mental defectives was eliminated by the factor of selected children being enrolled in the school by invitation and application.

C. H. Thompson named environment the chief cause of variation in the achievement of White and Negro children on mental and scholastic tests.[6]

In a study of West Virginia public school children, Doxey A. Wilkerson found that approximately 1/2 more Negro children than Whites were retarded. The achievement of Negro children in elementary and high school subjects was, in general, lower than that of White children in the same system. He says also:

> The performance of Negro children is not so variable as that of Whites. Some believe that this is due largely to mental ability; but it may not be the cause. There may be socio-economic causes; and inadequate, unequal educational facilities and opportunities may be important factors.[7]

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[5]A. F. Tredgold, Mental Hygiene (New York, 1929) pp. 394-96.

[6]C. H. Thompson, "Educational Achievement of Negro Children," American Political and Social Sciences, 1928, pp. 190, 193-208.

[7]Doxey A. Wilkerson, Journal of Negro Education (Review) (Washington, D. C., 1934) III, pp. 465-466.

A study was conducted in Coeffeyville, Kansas elementary schools by P. A. Witty and A. L. Decker, in which they measured the achievement of 1925 White and Negro children between the ages of 7 and 13 by the Stanford Achievement Test in 6 school subjects. They found that the median educational age of the Negro children falls 16.7 months below the median educational age of the White children, and that only 14.5% of the Negro children reach or exceed the median educational age of the other race. They nearest approach the educational status of Whites in History and Literature. Next, in order, are Arithmetic, Spelling, Nature Study and Science, Language Usage, and Reading. Younger children reach more nearly this status than older ones in every section of the test. The writer attempted to offer a solution to the problem as to cause by suggesting that it may be that intelligence matures more quickly in the case of the Negro children.[8]

A. F. Tredgold, in his duscussion of "Backward Children", states:

> Backward children differ from dull children in that their educational retardation is not usually due to intrinsic, but extrinsic causes; such as, environmental or social, and physical defects or causes, as vision, speech, etc. Some cases may be due to merely a slow development--maturing much later than the average--but in after-life, they may more than atone for their tardy evolution as in the cases of Darwin, Sir Isaac Newton, and Walter Scott. The instruction, method of teaching, teacher, facilities, rapport, etc., play a large part in the success of a child.[9]

Beth Wellman conducted a study in which she attempted to raise the I. Q.'s of some young kindergarten children, and concluded that I. Q.'s

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[8]P. A. Witty and A. L. Decker, "A Comparative Study of Educational Attainments of Negro and White Children," Journal of Educational Psychology, (Baltimore, Md., 1927) XVIII, pp. 497-500.

[9]A. F. Tredgold, Mental Deficiency (New York, 1929) pp. 182-84.

do not remain constant in all cases, but that they may, by training and environment, be raised considerably or be retained.[10]

E. B. Reuter names late entrance into school life the main cause of retardation. The study, which was made of retarded Negro children in Chicago, revealed that the majority of the retarded children in Chicago were recent emigrants from the South; but northern-born Negroes showed very little retardation.[11]

When the factor of location or section of the country is considered, the degree of the Negro's inferiority to Whites varies. In a study by Klineberg, the conclusions formed by Witty and Lehman, Garth, Pintner, and others were cited. They found that northern Negroes perform much better than southern Negroes on objective tests, and that the former are clearly above the Whites in a large number of southern states.[12]

Klineberg points out further:

> The marked difference between the environmental opportunities of northern and southern Negroes might easily account for the superiority of the Northern Negroes. Then, in the migrations from the South to the North, selective factors have caused the more intelligent stock to leave. In that case, Negroes, now in the North, would present, not an average group obtaining higher scores because of better environment, but a group that was superior at the start.[13]

Peterson and Lanier, in their study of comparative abilities, state that in Nashville schools, Negro children are retarded more than a year; in Bronx, N. Y., 1/2 year; and in Chicago, 8 months; but the re-

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[10]Beth L. Wellman, "Mental Growth From Pre-School to College," Journal of Experimental Psychology, (Lancaster, Pa., 1939) VI, pp. 127-38.

[11]E. B. Reuter, The American Race Problem: A Study of the Negro, (New York, 1927), pp. 66-73.

[12]Otto Klineberg, Negro Intelligence and Selective Migration, (New York, 1935), p. 1.

tardation of Negro children enrolled in New York schools is probably due to inadequate training, rather than lack of ability. Many of the "brightest" Negro children are in lower grades in N. Y. schools than they would be had they been there during their entire school life.[14]

It was found by W. H. Pyle that Negro children of both sexes display achievement less than 1/2 as efficient as Whites on tests of opposites and controlled association.[15]

Clark Foreman made an investigation of 3rd and 6th grade Negro children in 16 counties of 3 southern states: North Carolina, Alabama, and Louisiana, using the Stanford Achievement Test. Basing his conclusions on the results of the test, he offers the statement:

> There was found less retardation in those counties with higher average monthly salary of teachers, where per capita health expenditure is greater, expenditure per pupil attending school is greater, and a smaller percentage of "C" certificate teachers and "C" schools. Because the White environment is not specified, one cannot say that as the Negro environment approaches that of the Whites, their scores on tests vary accordingly.[16]

Alice T. Doran conducted an investigation in May, 1933, in a Chicago Junior High School which had a population made up entirely of Negroes. Two hundred twelve pupils who had begun in the Chicago Public Schools at 6 years of age, (then in 8th grade), were the subjects of the study. About 1/2 were retarded. Of the entire group, only 22 were accelerated. She used the Otis Classification Test (I, Achievement; II, Intelligence), and the Stanford Achievement Test (using only 5 of the battery of 10 tests). For both groups, it was shown that achievement ability did not equal mental ability. The results, from highest to lowest, were in Civics, History, Paragraph Meaning, Word Meaning, Language,

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[14]J. Peterson and L. H. Lanier, "Comparative Abilities of Whites and Negroes," Mental Measure Monograph, (Baltimore, Md., 1929) pp. 11-19.

[15]H. Pyle, "The Mind of the Negro Child," School and Society, (New York, 1915) I pp. 357-60.

and Arithmetic Computation. The fact that Civics and History ranked highest was accounted for by their being within the range of pupil experience. The dominance of environment or intelligence could not be determined.[17]

Daniel O. Feder found in using control and experimental groups that "students' previous record of achievement in grades 1 through 9 is the best basis for prediction at the college level."[18]

Otto Klineberg states: "In any case, there seems to be little doubt that the inadequate schooling of the average southern Negro child is also to be regarded as playing a most important part in test performance."[19]

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[16]Clark Foreman, "Environmental Factors In Negro Elementary Education," Journal of Negro Education, (Washington, D. C., 1932) I, pp. 508-09.

[17]Alice T. Doran, "Retardation Among Negro Pupils in the Junior High School," Journal of Negro Education, (Washington, D. C., 1936) V pp. 228-31

[18]Daniel O. Feder, "Prediction of Achievement At the College Level," Journal of Educational Psychology, (Baltimore, Md., 1935) XXVI pp. 597-603.

[19]Otto Klineberg, Race Differences, (New York, 1935) p. 176.

CHAPTER III

THE DATA

Investigation.-- In this study, the investigator attempted to determine the stage of development at which 53 pupils, 20 from the 6th grade, 14 from the 7th grade, and 19 from the 8th grade in 1938, and the same pupils from the 8th, 9th, and 10th grades, respectively, in 1940, show indications of acceleration or retardation. After having secured the permission of the President of Atlanta University, and of the Principal of the Laboratory High School to use the materials necessary to conduct the study, the investigator requested the record sheets for the given grades. Because of the fact that these sheets were not available, the tests were used, from which the necessary information was obtained. A list of the pupils enrolled in the respective grades was obtained and checked to find which of the pupils were enrolled in the grades designated at the time already mentioned--1938 and 1940.

The Progressive Achievement Test which was used, is a battery of five tests: Reading Vocabulary, Reading Comprehension, Arithmetic Fundamentsls, Arithmetic Reasoning, and Language. From the tests, scores from each test of the battery, total scores, chronological age, and grade norm were recorded for each child. The next step consisted of converting scores into grade placements, by using the Manual of Directions which accompanies the test. Chronological ages were converted into chronological age grades. (e.g., A pupil 14 years old, born in April has lived 169.2 months which is in terms of age grade, 8 years, 7 months.

Interpretation of Data.-- In order to determine the extent of acceleration or retardation in terms of age grade and grade score, (Column I on tables), the grade placement was subtracted from the chronological age grade, (e.g., a pupil whose age grade is 8.8 and grade score is 7.8 is actually retarded 1 year; but, if he is in 8th grade, he is accelerated because he is in a grade level beyond his performance).

To find the degree of acceleration or retardation in terms of grade score and grade norm, (Column II on tables), the grade score was subtracted from the grade norm, (e.g., a pupil whose grade score = 7.8, who is in 8th grade, for which the grade norm = 8.8, is actually accelerated 1 year because he is in a grade 1 year higher than his performance).

To determine the extent of acceleration or retardation in terms of chronological age grade and grade norm, (Colum III on tables), the chronological age grade was subtracted from the grade norm, (e.g., the pupil whose chronological age grade is 8.8, and who is in the 9th grade, for which the grade norm is 9.8, is accelerated because his performance is higher than is normal for his age; but retarded because he is being held in a grade lower than that in which he is capable of performing).

The amount of acceleration or retardation in terms of age grade score, grade score, and grade norm is recorded for each pupil in every subject for 1938 and 1940.[20]

Table I, page 12, shows the mean retardation or acceleration, (Columns I, II, and III) on the Reading Vocabulary test for 1938 and

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[20]See Appendix A, pp.

1940 for the 6th and 8th grades. Means I (for 1938 and 1940) = -.55 and -.40; means II = -.35 and -.50; and means III = -.50 and -.35. This indicates, in order, a decrease, an increase, and a decrease in retardation in terms of the scores already explained. The S. D.'s I, (± or - standard deviation of acceleration by pupils from the mean), = 1.78 (1938) and 1.98; S. D.'s II = 1.28 and 1.35; and S. D.'s III = .87 and .94. The difference between the means I (Diff.) = -.15; II = -.15; and III= -.15 grade points or 1 1/2 months. The probable error of the means I, (PE/M's I)= .26 and .30; the probable error of the means II, (PE/M's II= .19 and .20; and the probable error of the means III (PE/M's III) = .13 and .14 grade points or 1.3 and 1.4 months. The probable error of the difference I (PE/D I) = .41; PE/A II = .27; and PE/D III = .19, which yield critical ratios of .73, .55, and .78, respectively. The critical ratios, in like manner, determine 68 chances in 100 in favor of a decrease in retardation (I); 64 chances in 100 for an increase (II); and 70 chances in 100 for a decrease in retardation (III) in Reading Vocabulary over a period of three years with the same prevailing learning conditions.

Table II, page 13, shows that in Reading Comprehension, there are 93 chances in 100 for decrease (I), and 89 in 100 for decrease in retardation (II) as a result of critical ratios I and II : 2.23 and 1.87. The S. D.'s I, 1.32 and 2.16, pertain to means I, + .60 and -.25: a difference of -.85. S. D's II, .27 and 1.49, pertain to means II, -.50 and -.10: a difference of -.40. PE/M's I = .20 and .33; while PE/M's II = .04 and .22.

TABLE I SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: READING VOCABULARY

	I		II		III	
	Acceleration					
	(Grade Score Age Grade)		(Grade Norm Grade Score)		(Grade Norm Age Grade)	
	1938	1940	1938	1940	1938	1940
N	20	20	20	20	20	20
Mean	-.55	-.40	-.35	-.50	-.50	-.35
S. D.	1.70	1.98	1.28	1.35	.87	.94
RELIABILITY OF THE DIFFERENCE						
Diff.	-.15		-.15		-.15	
P.E./M	.26	.30	.19	.20	.13	.14
P.E./D	.41		.27		.19	
Critical Ratio	.73		.55		.78	
Chances in 100	68		64		70	

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

TABLE II SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: READING COMPREHENSION

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	20	20	20	20
Mean	+ .60	-.25	-.50	-.10
S. D.	1.32	2.16	.27	1.49
RELIABILITY OF THE DIFFERENCE				
Diff.	-.85		-.40	
P.E./M	.20	.33	.04	.22
P.E./D	.38		.22	
Critical Ratio	2.23		1.87	
Chances in 100	93		89	

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

Table III, page 15, which shows the amount of acceleration or retardation in Arithmetic Reasoning, indicates that means I are -.20 and -.36; and means II are -.20 and -1.50 with S. D.'s I of 1.19 and 1.83, and S. D.'s II of .99 and 1.43. The difference I = -.15; and II, = -1.30. PE/M's I = .18 and .28; PE/M's II = .15 and .22. PE/D I = .34; and PE/D II = .27. The critical ratios of I and II, .44 and 4.81, indicate 61 and 100 chances, respectively, in 100 for an increase in retardation.

The degree of acceleration or retardation in Arithmetic Fundamentals is shown in Table IV, page 16. The subjects used, 20, show means I to be -.30 and -1.35; and means II to be -.50 and -1.15: differences of -1.05 and -.65. The S. D.'s I = 1.13 and 1.69; and S. D,'s II = .77 and 1.11. The reliability of the difference in terms of PE/M's I = .17 and .26; and in terms of PE/M's II = .52 and .74. PE/D I = .31; and PE/D II= .90. The chances in 100, revealed by critical ratios of 3.30 and .72, are 99 and 68 in favor of increased retardation.

Table V, page 17, indicates a mean retardation I in Language to be -.20 and -.15; and mean retardation II to be -.35 and -.45: differences of -.05 and -.10 with S. D.'s I = 1.46 and 1.87; and S. D's II = .82 and 1.34. The PE/M's I = .22 and .29; and the PE/M's II = .12 and .20. PE/D I = .36; and PE/D II = .23. The critical ratios of I and II = .14 and .43, which reveal that there are 53 chances in 100 for a decrease in retardation, and 61 chances in 100 for an increase in retardation under the same conditions of learning.

TABLE III SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: ARITHMETIC REASONING

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Grade Score)
	1938	1940	1938	1940
N	20	20	20	20
Mean	-.20	-.35	-.20	-1.50
S. D.	1.19	1.83	.99	1.43
RELIABILITY OF THE DIFFERENCE				
Diff.		-.15		-1.30
PE/M	.18	.28	.15	.22
PE/D		.34		.27
Critical Ratio		.44		4.81
Chances in 100		61		100

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

TABLE IV SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: ARITHMETIC FUNDAMENTALS

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	20	20	20	20
Mean	-.30	-1.35	-.50	-1.15
S. D.	1.13	1.69	.77	1.11

RELIABILITY OF THE DIFFERENCE

Diff.	-1.05		-.65	
P.E./M	.17	.26	.52	.74
P.E./D	.31		.90	
Critical Ratio	3.30		.72	
Chances in 100	99		68	

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

TABLE V SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: LANGUAGE

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Grade Score)
	1938	1940	1938	1940
N	20	20	20	20
Mean	-.20	-.15	-.35	-.45
S. D.	1.46	1.87	.82	1.34
RELIABILITY OF THE DIFFERENCE				
Diff.		-.05		-.10
P.E./M	.22	.29	.12	.20
P.E./D		.36		.23
Critical Ratio		.14		.43
Chances in 100		53		61

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

Table VI, page 19, indicates the total amount of acceleration or retardation in 1938 and 1940 in all 5 subjects of the battery. The means I, + .10 and -.15, and means II, -.35 and -.55, show differences of .25 and .20 with S. D.'s I = 1.24 and 1.57, and S. D.'s II = -.35 and -.55. PE/M's I = .19 and .24, while PE/M's II = .49 and .20. PE/D I, .30, and PE/D II, .53, reveal critical ratios of 83 and .37, which are interpreted as being indicative of the fact that there are 72 chances in 100 for a decrease in acceleration (from + .10 to -.15), and 60 chances in 100 for an increase in retardation (from -.35 to -.55).

Figure 1, page 20, gives a graphic description of the results found in Tables I through VI in terms of the mean retardation or acceleration for 1938 and 1940, as shown by Column I. The greatest amount of acceleration is shown in Reading Comprehension in 1938. The greatest amount of retardation, in 1938, occurs in Reading Vocabulary. Next, in order, are Arithmetic Fundamentals, Language, and Arithmetic Reasoning. In 1940, however, the order, from greatest to least retardation, is in Arithmetic Fundamentals, Reading Vocabulary, Arithmetic Reasoning, Reading Comprehension, and Language.

TABLE VI SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SIX AND EIGHT

SUBJECT: TOTAL

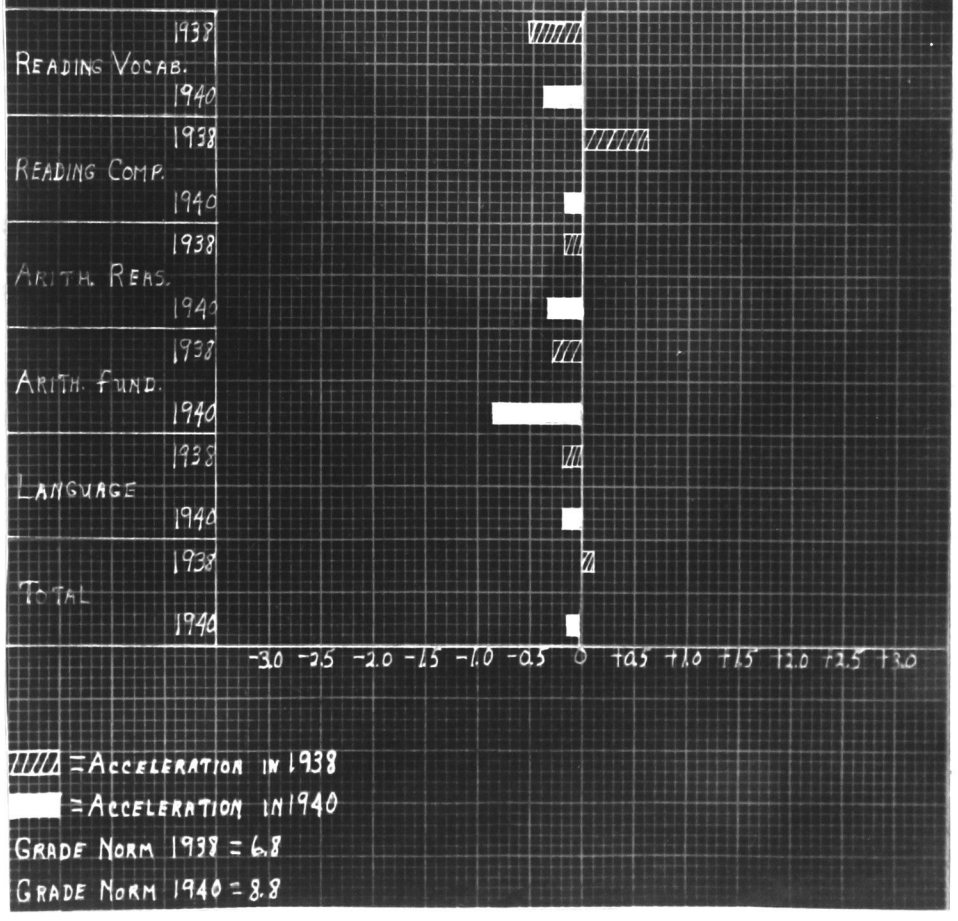
	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	20	20	20	20
Mean	.10	-.15	-.35	-.55
S. D.	1.24	1.57	.70	1.30
RELIABILITY OF THE DIFFERENCE				
Diff.	-.25		-.20	
P.E./M	.19	.24	.49	.20
P.E./D	.30		.53	
Critical Ratio	.83		.37	
Chances in 100	72		60	

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

FIGURE I.

SHOWING THE AMOUNT OF ACCELERATION OR RETARDATION IN EACH SUBJECT BY GRADES SIX AND EIGHT IN 1938 AND 1940



Interpretation of the Data of the 7th and 9th grades.-- The following 6 tables are to be concerned with the 7th and 9th grades from which 14 pupils were used for the investigation.[21]

Table VII, page 22, shows the means I to be -.48 and -.62; means II to be -1.30 and -1.19; and means III to be -.39 and -.39. S. D.'s I = 1.98 and 2.14; S. D.'s II = 1.40 and 1.45; and S. D.'s III = .99 and 1.32. The difference between the means I .14; between means II = -.11; and between means III = 0.00. PE/M's I = .39 and .38. PE/M's II = .26 and .27. PE/M's III = .18 and .24. PE/D's I, II and III = .54, 1.76, and .95, respectively. Critical ratio I, .26, yields 57 chances in 100 in favor of increased retardation; critical ratio II, .06, 51 in 100 for decreased retardation; and critical ratio III, 0.00, yields 50 chances for either increased or decreased retardation over a similar period of time under the same conditions of learning.

Table VIII, page 23, which indicates acceleration or retardation in Reading Comprehension, shows means I to be -.83 and -.69; and means II to be -1.33 and -1.12: differences of -.14 and -.21. S. D.'s I = 1.54 and 2.36; while S. D.'s II = .87 and 1.50. The PE/M's I = .28 and .43; and PE/M's II = .16 and .28. PE/D I =.51; and PE/D II = .32. The critical ratio I, .27, yields 57 chances in 100 for a decrease in retardation. The critical ratio II, .65 yields 67 chances in 100 in favor of a decrease in retardation.

The amount of acceleration or retardation shown in Arithmetic Reasoning is indicated in Table IX, page 24. The means I, -.90 and -.69, and the means II, -1.55 and -1.20 show decreases in retardation of -.21 and -.35.

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[21]For individual scores on each test, see Appendix B, pp.

TABLE VII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: READING VOCABULARY

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)		III Acceleration (Grade Norm Age Grade)	
	1938	1940	1938	1940	1938	1940
N	14	14	14	14	14	14
Mean	-.48	-.62	*1.30	-1.19	-.39	-.39
S. D.	1.98	2.14	1.40	1.45	.99	1.32
RELIABILITY OF THE DIFFERENCE						
Diff.	.14		-.11		0.00	
P.E./M	.39	.38	.26	.27	.18	.24
P.E./D	.54		1.76		.95	
Critical Ratio	.26		.06		.00	
Chances in 100	57		51		50	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

TABLE VIII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: READING COMPREHENSION

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	14	14	14	14
Mean	-.83	-.69	-1.33	-1.12
S. D.	1.54	2.36	.87	1.50
RELIABILITY OF THE DIFFERENCE				
Diff.	-.14		-.21	
P.E./M	.28	.43	.16	.28
P.E./D	.51		.32	
Critical Ratio	.27		.65	
Chances in 100	57		67	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

TABLE VIII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: ARITHMETIC REASONING

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	14	14	14	14
Mean	-.90	-.69	-1.55	-1.20
S. D.	1.40	2.36	.75	1.34
RELIABILITY OF THE DIFFERENCE				
Diff.	-.21		-.35	
P.E./M	.26	.46	.14	.25
P.E./D	.53		.28	
Critical Ratio	.39		1.25	
Chances in 100	61		80	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

S. D.'s I are 1.40 and 2.36; and S. D.'s II are .75 and 1.34. PE/M's I are .26 and .46, while PE/M's II are .14 and .25. The critical ratio I, .39, determined by PE/D I of .53, indicates that there are 61 chances in 100 in favor of a decrease in retardation. The critical ratio II, 1.25, determined by PE/D II of .28, indicates that there are 80 chances in 100 for a decrease in retardation under the same learning conditions.

Table X, page 26, indicates the amount of acceleration or retardation evidenced by the 14 pupils of the 7th and 9th grades in Arithmetic Fundamentals. The means I = -1.26 and -1.55: a difference of -.29. The means II = -1.20 and -2.13: a difference of -.93. No degree of acceleration or retardation exhibited by any pupil deviates from the means I more than + or - 1.50 and 1.87 S. D. units; nor from the means II more than + or - 1.04 and 1.35 S. D. units. The PE/M's I = .28 and .34; and PE/M's II = .19 and .25. The PE/D I is seen to be .44; and PE/D II, .31, which determine critical ratios of .65 and .22, respectively. The ratio, .65, yields 67 chances in 100, and the ratio, .22, yields 55 chances in 100, both in favor of increased retardation.

In Table XI, page 27, the results of the Language test are shown. The means I are -.28 and -1.84. The means II are -.26 and -1.58. The difference between the means I = -1.56; and between the means II, -1.32 which show a decided increase in retardation--more than 1 year. PE/M's I = .34 and .38; and PE/M's II = .30 and .86. The PE/D I, a determining factor in calculating the critical ratio, is .51, and yields a critical ratio of 3.05. The PE/D II = .91, yielding a critical ratio of 1.34. The chances are 98 and 81 chances, respectively, in 100 in favor of an increase in retardation under the same learning conditions.

TABLE X SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: ARITHMETIC FUNDAMENTALS

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	14	14	14	14
Mean	-1.26	-1.55	-1.20	-2.13
S. D.	1.50	1.87	1.04	1.35
RELIABILITY OF THE DIFFERENCE				
Diff.	-.29		-.93	
P.E./M	.28	.34	.19	.25
P.E./D	.44		.31	
Critical Ratio	.65		.22	
Chances in 100	67		55	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

TABLE XI SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: LANGUAGE

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	14	14	14	14
Mean	-.28	-1.84	-.26	-1.58
S. D.	1.86	2.05	1.63	1.28
RELIABILITY OF THE DIFFERENCE				
Diff.	-1.56		-1.32	
P.E./M	.34	.38	.30	.86
P.E./D	.51		.91	
Critical Ratio	3.05		1.34	
Chances in 100	98		81	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

As was shown for grades 6 and 8, the total amount of acceleration or retardation in all 5 subjects is shown for grades 7 and 9 in Table XII, page 29. The total means I = -1.12 and -1.55; and the means II = -.55 and -2.50. This indicates that the pupils of grades 6 and 8 showed an increase in retardation from 1938 and 1940 when scores are considered as one total score. S. D.'s I = 1.72 and 2.27; and S. D.'s II = 1.19 and 1.35. The difference between means I = -.43; and between means II = -1.95. The PE/M's I = .31 and .42; and PE/M's II = .22 and .25. PE/D I, .52, yields a critical ratio of .82, which indicates that there are 71 chances in 100 for increased retardation. PE/D II, .33, yields a critical ratio of 5.90, which indicates that there are 100 chances in 100 in favor of increased retardation--it is significant because the retardation is not due to chance, but some other factor.

Figure 2, page 30, is a graphic description of the amount of acceleration exhibited by grades 7 and 9 in 1938 and 1940, respectively, in each subject. No degree of acceleration is seen at either year or grade level--all retardation. The greatest retardation for grade 7 (1938) is seen in Arithmetic Fundamentals. Next, in order, are Arithmetic Reasoning, Reading Comprehension, Reading Vocabulary, and Language.

For grade 9, the greatest amount of retardation occurs in Language--the direct opposite of the case in grade 7. Next, in order, are Arithmetic Fundamentals, Arithmetic Reasoning and Reading Comprehension (equal), and Reading Vocabulary.

TABLE XII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES SEVEN AND NINE

SUBJECT: TOTAL

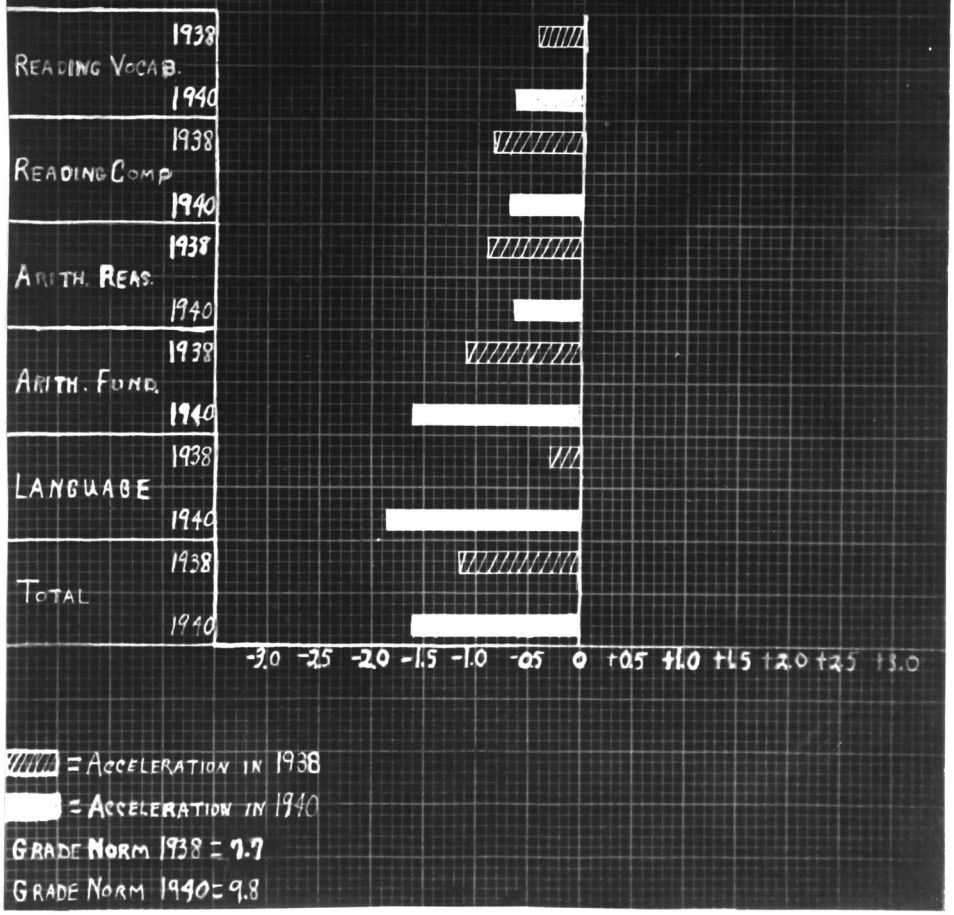
	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	14	14	14	14
Mean	-1.12	-1.55	-.55	-2.50
S. D.	1.72	2.27	1.19	1.35
RELIABILITY OF THE DIFFERENCE				
Diff.	-.43		-1.95	
P.E./M	.31	.42	.22	.25
P.E./D	.52		.33	
Critical Ratio	.82		5.90	
Chances in 100	71		100	

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

FIGURE 2.

SHOWING THE AMOUNT OF ACCELERATION OR RETARDATION IN EACH SUBJECT BY GRADES SEVEN AND NINE IN 1938 AND 1940



Interpretation of the Data of Grades 8 and 10.-- This group of tables which follows indicates the amount of acceleration or retardation evidenced by the 19 pupils of the 8th and 10th grades in 1938 and 1940, respectively, on the 5 tests of the battery, and the total of all subjects.[22]

Table XIII, page 32, shows the results of the Reading Vocabulary test. The means I are -.76 and -1.55; means II are -1.50 and -2.24; and means III are -.14 and -.35, which show differences of -.79, -.74, and -.21 respectively. PE/M's I = .37 and .31; PE/M's II = .28 and .23; and PE/M's III = .23 and .19. PE/D I, .48, yields a critical ratio of 1.64, and it, in turn, indicates that there are 87 chances in 100 for increased retardation. PE/D II, .36, determines a critical ratio of 2.05 which reveals that there are 91 chances in 100 for increased retardation. PE/D III, .29, indicates a critical ratio of .72 which yields 68 chances in 100 for an increase in retardation over a similar period of training under the same conditions of learning.

Table XIV, page 33, indicates the amount of acceleration or retardation shown in Reading Comprehension. The means I = -.34 and -1.58; and means II =-1.07 and -1.81, which indicate differences of -1.24 and -.74 toward an increase in retardation. The S. D.'s I = 2.48 and 2.28; while S. D.'s II = 1.89 and 1.48. PE/M's I = .39 and .36; and PE/M's II = .29 and .25. PE/D I = .53; PE/D II = .38. The critical ratios I and II, 2.34 and 2.95, respectively, indicate that there are 94 and 97 chances in 100 in favor of an increase in retardation in Reading Comprehension.

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[22]For individual scores on each test, see Appendix C, pages

TABLE XIII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES EIGHT AND TEN

SUBJECT: READING VOCABULARY

	I		II		III	
	Acceleration		Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm Grade Score)		(Grade Norm Age Grade)	
	1938	1940	1938	1940	1938	1940
N	19	19	19	19	19	19
Mean	-.76	-1.55	-1.50	-2.24	-.14	-.35
S. D.	2.37	1.97	1.84	1.52	1.25	1.02
RELIABILITY OF THE DIFFERENCE						
Diff.	-.79		-.74		-.21	
P.E./M	.37	.31	.28	.23	.23	.19
P.E./D	.48		.36		.29	
Critical Ratio	1.64		2.05		.72	
Chances in 100	87		91		68	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

TABLE XIV SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES EIGHT AND TEN

SUBJECT: READING COMPREHENSION

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Grade Score)	
	1938	1940	1938	1940
N	19	19	19	19
Mean	-.34	-1.58	-1.07	-1.81
S. D.	2.48	2.28	1.89	1.48
RELIABILITY OF THE DIFFERENCE				
Diff.	-1.24		-.74	
P.E./M	.39	.36	.29	.25
P.E./D	.53		.38	
Critical Ratio	2.34		2.95	
Chances in 100	94		97	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

Table XV, page 35, shows the results of the test in Arithmetic Reasoning. The means I, -.28 and -1.55, show a difference of -1.27; and means II, -.34 and -.98, show a difference of -.64. S. D.'s I = 1.94 and 1.69; and S. D.'s II = 1.00 and 1.04. PE.M's = .30 and .26; PE/M's II = .16 and .16. PE/D I = .39; and PE/D II = .22. The critical ratio I, 3.25 indicates 98 chances in 100 in favor of increased retardation. Critical ratio II, 2.90, indicates 97 chancies in 100 in favor, also, of increased retardation.

Table XVI, page 36, represents the amount of acceleration or retardation in Arithmetic Fundamentals, of which the means I = -1.28 and -2.19; and means II = -1.29 and -2.71, indicating differences of -.91 and -1.42. The S. D's = 1.54 and 1.54; and S. D's II = 1.01 and .87. PE/M's I are .24 and .25; but PE/M's II are only .16 and .13. PE/D's I and II, .35 and .20, determine critical ratios of 2.60 and 7.10, which in turn, reveal 96 and 100 chances in 100 that retardation will increase over a similar period of time under the same learning conditions.

The results of the Language test are shown in Table XVII, page 37. The mean retardation I = -.65 and -2.33; and the mean retardation II = -1.13 and -2.29. The difference I = -1.68; and the difference II = -1.16. S. D.'s I = 2.43 and 1.99; and S. D.'s II = .25 and .26. PE/D I, .49, determines a critical ratio of 3.42 which indicates that there are 99 chances in 100 in favor of increased retardation. PE/D II, .36, determines a critical ratio of 3.22 which indicates that there are 98 chances in 100 in favor of increased retardation in Language.

TABLE XV SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES EIGHT AND TEN

SUBJECT: ARITHMETIC REASONING

	I Acceleration (Grade Score Age Grade)		II Acceleration (Grade Norm Age Grade)	
	1938	1940	1938	1940
N	19	19	19	19
Mean	-.28	-1.55	-.34	-.98
S. D.	1.94	1.69	1.00	1.04
RELIABILITY OF THE DIFFERENCE				
Diff.	-1.27		-.64	
P.E./M	.30	.26	.16	.16
P.E./D	.39		.22	
Critical Ratio	3.25		2.90	
Chances in 100	98		97	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

TABLE XVI SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES EIGHT AND TEN

SUBJECT: ARITHMETIC FUNDAMENTALS

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Age Grade)
	1938	1940	1938	1940
N	19	19	19	19
Mean	-1.28	-2.19	-1.29	-2.71
S. D.	1.54	1.58	1.01	.87
RELIABILITY OF THE DIFFERENCE				
Diff.	-.91		-1.42	
P.E./M	.24	.25	.16	.13
P.E./D	.35		.20	
Critical Ratio	2.60		7.10	
Chances in 100	96		100	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

TABLE XVII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM* FOR GRADES EIGHT AND TEN

SUBJECT: LANGUAGE

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Age Grade)
	1938	1940	1938	1940
N	19	19	19	19
Mean	-.65	-2.33	-1.13	-2.29
S. D.	2.43	1.99	1.59	1.64
RELIABILITY OF THE DIFFERENCE				
Diff.	-1.68		-1.16	
P.E./M	.38	.31	.25	.26
P.E./D	.49		.36	
Critical Ratio	3.42		3.22	
Chances in 100	99		98	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

The last table of the group, Table XVIII, page 39, indicates the total amount of acceleration or retardation exhibited on the whole 5 tests of the battery. The means I = -.81 and -2.32; and means II = -1.41 and -2.31, with S. D.'s I = 2.07 and 1.98; while S. D.'s II = 1.01 and 1.07. The difference between the means I = -1.51; and between the means II =-.90. PE/M's I = .42 and .40. PE/M's II = .16 and .17. PE/D I, .58 shows a critical ratio of 2.77 which indicates that there are 97 chances in 100 in favor of increased retardation. PE/D II, .23, reveals a critical ratio of 4.18 which yields 100 chances in 100 in favor of increased retardation in the skill subjects which compose the test.

Figure 3, page 40, is a graphic description of the amount of acceleration or retardation exhibited by the 19 pupils on all 5 tests (and the total scores) of the battery in 1938 and 1940. In 1938, the greatest retardation occurs in Arithmetic Fundamentals. Next, in order, are Reading Vocabulary, Language, Reading Comprehension, and Arithmetic Reasoning.

In 1940, however, the same pupils exhibited greatest retardation in Language; and next, in order, are Arithmetic Fundamentals, Reading Vocabulary, Reading Comprehension, and Arithmetic Reasoning. The last three subjects listed are equal in that the same degree of retardation was evidenced on each test. There was no indication of acceleration on any test of the battery.

TABLE XVIII SHOWING AMOUNT OF ACCELERATION OR RETARDATION IN TERMS OF GRADE SCORE, AGE-GRADE SCORE AND GRADE NORM FOR GRADES EIGHT AND TEN

SUBJECT: TOTAL

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Age Grade)
	1938	1940	1938	1940
N	19	19	19	19
Mean	-.81	-2.32	-1.41	-2.31
S. D.	2.07	1.98	1.01	1.07
RELIABILITY OF THE DIFFERENCE				
Diff.	-1.51		-.90	
P.E./M	.42	.40	.16	.17
P.E./D	.58		.23	
Critical Ratio	2.77		4.18	
Chances in 100	97		100	

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

FIGURE 3.

SHOWING THE AMOUNT OF ACCELERATION OR RETARDATION IN EACH SUBJECT BY GRADES EIGHT AND TEN IN 1938 AND 1940

CHAPTER IV

CONCLUSIONS

1. The results of the scores made by the pupils of the 6th grade (1938) show best performance in Reading Comprehension. The 8th grade (1940) showed least retardation in Reading Comprehension and Language.

2. The pupils of the 6th and 8th grades performed better on Reading Vocabulary and Reading Comprehension tests than on Arithmetic Reasoning and Arithmetic Fundamentals tests.

3. The greatest acceleration among the 6th grade pupils is shown in Reading Comprehension. There are no signs of acceleration among the 7th grade pupils; but, the least retardation is seen in Language. Among the 8th grade pupils, the least retardation occurs in Arithmetic Reasoning.

4. In 1940, the pupils of the 6th, 7th, and 8th grades in 1938, then in the 8th, 9th, and 10th grades, respectively, show greatest retardation by grades in the following subjects: 8th grade, in Language and Reading Comprehension; 9th grade, in Reading Vocabulary; and 10th grade, in Reading Vocabulary, Reading Comprehension, and Arithmetic Reasoning (all are equal).

5. The greatest retardation in 1938 among the 6th grade pupils occurs in Reading Vocabulary; and among the 7th and 8th grade pupils, in Arithmetic Fundamentals.

6. Among the 8th grade pupils in 1940, the greatest retardation occurs in Arithmetic Fundamentals; and among the 9th and 10th grade pupils, in Language.

7. The 20 pupils of the 6th grade in 1938, and 8th grade in 1940, show indications of retardation at the 6th grade level in all subjects except Reading Comprehension, in which they show acceleration = .60 grade points or 6 months; but in 1940, the same pupils show retardation = .25 or 2 1/2 months in the same subject.

8. The 14 pupils of the 7th grade, in 1938, show indications of retardation in all subjects; and at the 9th grade level, in 1940, they show a decided increase in retardation in all subjects.

9. The 19 pupils of the 8th grade, in 1938, show indications of retardation in all subjects; and at the 10th grade level, in 1940, they show even greater retardation.

10. Retardation increased with an increase in grade level in the majority of the subjects of the battery for each group.

11. In considering the group of 6th grade pupils, in 1938, and the same group of 8th grade pupils, in 1940, it was found that the chances are 68 in 100 in Reading Vocabulary, 93 in 100 in Reading Comprehension, 61 in 100 in Arithmetic Reasoning, and 99 in 100 in Arithmetic Fundamentals that retardation will increase over a period of 3 years under the same learning conditions. However, in Language, the chances are 53 in 100 in favor of decreased retardation.

12. The chances in 100 that retardation will increase for the pupils of the 7th grade in 1938, and 9th grade in 1940, are: 57 in Reading Vocabulary, 67 in Arithmetic Fundamentals, and 98 in Language. But, the chances in 100 that retardation will decrease are: 57 in Reading Comprehension, and 61 in Arithmetic Reasoning.

13. The group of pupils of the 8th and 10th grades in 1938 and 1940, respectively, show chances of 87 in 100 in Reading Vocabulary; 94 in 100 in Reading Comprehension; 98 in 100 in Arithmetic Reasoning;

99 in 100 in Arithmetic Fundamentals, and 97 in/00 in Language that retardation will increase over a period of three years under the same conditions of learning.

CHAPTER V

SUMMARY

In this investigation, the records of 53 pupils, 20 from the 6th grade, 14 from the 7th grade, 19 from the 8th grade, in 1938, and the same number from the 8th, 9th, and 10th grades, respectively, in 1940, were used to determine the stage of development at which these 53 pupils of the Atlanta University Laboratory Schools show indications of acceleration or retardation in scholastic achievement.

The dat used were taken directly from the individual Progressive Achievement Tests. It is, (the Progressive Achievement Test), a battery of 5 tests: Reading Vocabulary, Reading Comprehension, Arithmetic Reasoning, Arithmetic Fundamentals, and Language. The pupils who were enrolled in the 6th, 7th, and 8th grades in 1938 are the same pupils used in this study from the 8th, 9th, and 10th grades, respectively, in 1940.

Under the system of school management employed in the school, formal practice in the skills is discontinued after the pupils have completed the 6th grade of the Laboratory Elementary School. When they enter the 7th grade of the Laboratory High School, special work is assigned, provided there is a need for it.

The results of the study indicate that retardation increases with grade level in nearly all instances. Of the three groups of pupils used, the 8th and 10th grade pupils (1938 and 1940, respectively) show the greatest retardation.

For the three groups, the chances in 100 exceed 60 in all cases

except Reading Vocabulary and Reading Comprehension, for which there are only 57 in 100, and nearly always in favor of an increase in retardation.

The chances in 100 are above 90 in favor of increased retardation in nearly all of the subjects of the 8th and 10th grades. Though not significant, this is highly indicative of factors other than chance operating to effect this condition of increased retardation. It is possible that the Progressive Achievement Test is not suitable for determining the achievement toward which this school gives opportunity. If this be the case, then, there is a need for some other type of objective measure or test which is suitable for determining this achievement.

The chances in 100 that retardation will increase under the same learning conditions, in terms of grade score and age grade score, range from 53 to 99. The 99 chances in 100 occurred in Arithmetic Fundamentals for the 6th grade; and in Language for the 8th grade.

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APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: READING VOCABULARY

	I		II		III	
	Acceleration		Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)	(Grade Norm	Age Grade)
Pupil	1938	1940	1938	1940	1938	1940
1. jb.	2.7	1.2	1.9	0.6	-0.8	0.6
2. mb.	-2.1	-2.4	0.6	-1.4	0.6	1.0
3.jb.	2.8	2.3	1.7	1.3	-1.1	-1.0
4. lb.	-0.7	-1.4	1.2	-1.7	-0.5	-1.3
5. mb.	2.3	1.7	1.3	0.9	-1.0	-0.8
6. ab.	2.9	1.7	2.0	1.0	-0.9	-0.7
7. ob.	0.0	-0.9	-0.3	-1.0	-0.3	-0.1
8. rc.	1.4	1.8	0.2	1.6	-1.2	-1.2
9. ec.	-0.4	-0.7	-1.4	-1.6	-1.0	-0.9
10. cc.	-2.9	-5.1	-0.9	-3.7	1.0	1.4
11. mh.	1.2	0.6	0.7	-0.7	-0.5	-1.3
12. gh.	1.1	-0.1	0.2	-0.8	-0.9	-0.7
13. rj.	3.3	2.7	1.7	-1.1	-1.6	-1.6
14. lj.	0.9	-0.4	1.0	0.8	0.1	0.4
15. mmc.	-0.3	-0.5	-1.1	-1.1	-0.8	-0.6
16. hm.	3.1	3.7	1.7	1.3	-1.4	-2.4
17. dn.	2.0	2.1	1.0	1.3	-1.0	-0.8
18. ar.	0.0	0.8	-1.4	-0.5	-1.4	-1.3
19. lw.	-3.0	-0.6	-1.5	-0.7	1.5	-0.1
20. ww.	0.7	-0.2	-0.2	-0.9	-0.9	-0.7
Mean	-.55	-.40	-.35	-.50	-.50	-.35

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: READING COMPREHENSION

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. jb.	1.1	0.5	0.3	-0.1
2. mb.	-2.0	-2.6	-1.4	-1.6
3. jb.	2.2	1.1	2.4	1.4
4. lb.	-0.4	-0.9	-0.3	-1.6
5. mb.	1.8	-0.8	1.1	0.3
6. ab.	1.0	0.1	2.2	1.5
7. ob.	-0.3	0.6	-1.2	-1.3
8. rc.	1.7	0.5	3.0	1.8
9. ec.	-0.8	-1.8	-0.5	-1.4
10. cc.	-2.3	-1.3	-3.6	-2.2
11. mh.	0.3	0.1	0.9	-0.4
12. gh.	0.0	-0.9	1.9	1.2
13. rj.	1.7	0.1	3.1	1.5
14. lj.	1.2	1.3	-0.1	0.3
15. mmc.	0.2	0.6	-1.2	-1.8
16. hm.	2.2	0.8	5.6	3.2
17. dn.	1.1	0.1	2.5	1.9
18. ar.	1.0	-0.4	1.4	0.1
19. lw.	-1.3	0.2	0.9	0.8
20. ww.	0.3	-0.6	0.0	-0.7
Mean	.60	-.25	-.50	-.10

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: ARITHMETIC REASONING

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. jb.	-1.4	-2.0	-2.2	-2.0
2. mb.	-3.0	-3.4	-2.4	-2.4
3. jb.	1.3	1.8	2.5	1.5
4. lb.	-0.5	-1.0	-1.0	-2.3
5. mb.	0.7	-0.3	0.9	0.1
6. ab.	0.8	-0.1	0.1	-0.6
7. ob.	-0.5	-0.8	-2.3	-2.4
8. rc.	1.6	0.4	1.4	0.2
9. ec.	-0.5	-1.5	-1.7	-2.6
10. cc.	-2.2	-1.2	-2.8	-1.4
11. mh.	0.0	-0.5	-0.7	-0.6
12. gh.	-0.6	-1.5	-1.2	-1.9
13. rj.	0.8	-0.8	-1.0	-0,6
14. lj.	0.1	0.2	-1.8	-1.4
15. mmc.	-1.4	-2.2	-1.8	-2.4
16. hm.	1.3	-0.1	4.0	2.0
17. dn.	0.2	-0.8	-0.0	-0.8
18. ar.	0.7	-0.7	-0.9	-2.2
19. lw.	-1.8	-0.3	-0.5	-0.6
20. ww.	-0.4	-0.5	-0.8	-2.5
Mean	-.20	-.35	-.20	-1.50

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: ARITHMETIC FUNDAMENTALS

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. jb.	-1.7	-2.4	-2.5	-3.0
2. mb.	-2.3	-3.5	-1.7	-2.5
3. jb.	0.7	-1.0	-0.4	-2.0
4. lb.	-1.4	-1.4	-1.9	-2.7
5. mb.	1.9	1.1	0.9	0.3
6. ab.	0.0	-1.5	-0.9	-2.2
7. ob.	-0.9	-2.1	-1.2	-2.2
8. rc.	1.3	1.2	-0.1	0.0
9. ec.	-0.9	-2.7	-1.9	-3.6
10. cc.	-1.5	-4.4	-0.5	-3.0
11. mh.	-0.5	-0.7	-1.0	-3.0
12. gh.	-0.1	-1.7	-1.0	-2.4
13. rj.	0.3	0.7	-1.3	-0.9
14. lj.	-1.4	-3.3	-1.3	-2.9
15. mmc.	-0.7	-2.1	-1.5	-2.7
16. hm.	0.2	1.9	-1.2	-0.5
17. dn.	1.2	0.5	0.2	-0.3
18. ar.	0.1	-1.1	-1.3	-2.4
19. lw.	-1.6	-2.0	-0.1	-2.1
20. ww.	0.4	-1.6	-0.5	-2.3
Mean	-.30	-1.35	-.50	-1.15

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: LANGUAGE

	I		II	
	Acceleration (Grade Score Age Grade)		Acceleration (Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. jb.	1.3	-0.8	0.5	-1.4
2. mb.	-1.7	-2.4	-1.1	-1.4
3. jb.	1.1	1.4	0.0	0.4
4. lb.	1.1	0.2	-1.6	-1.1
5. mb.	1.4	1.6	0.4	0.8
6. ab.	0.0	0.3	-0.9	0.4
7. Ob.	-1.3	-1.6	-1.6	-1.7
8. rc.	0.5	1.6	-0.7	0.4
9. ec.	-1.0	-1.1	-2.0	-2.0
10. cc.	-4.9	-5.1	-3.0	-3.7
11. mh.	-1.5	-1.8	-2.0	0.5
12. gh.	0.4	-0.3	-0.5	-1.0
13. rj.	2.3	2.8	0.7	1.2
14. lj.	-0.3	-0.7	-0.2	-0.3
15. mmc.	0.0	-0.6	-0.8	-1.1
16. hm.	1.6	3.4	0.2	1.0
17. dn.	1.2	0.5	0.2	-0.3
18. ar.	-0.1	-1.1	-1.5	-2.4
19. lw.	-1.6	-0.6	-0.1	-0.7
20. ww.	0.4	1.7	-0.5	1.0
Mean	-.20	-.15	-.35	-.45

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX A

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SIX AND EIGHT

SUBJECT: TOTAL

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. jb.	-0.1	-0.9	-0.8	-1.4
2. mb.	-2.2	-1.6	-2.9	-1.9
3. jb.	1.3	0.2	1.4	0.4
4. lb.	-1.0	-1.5	-0.9	-2.2
5. mb.	1.8	0.8	1.2	0.4
6. ab.	0.5	-0.4	0.5	-0.2
7. ob.	-0.7	-1.0	-1.7	-1.8
8. rc.	1.2	0.0	1.7	0.5
9. ec.	-0.8	-1.8	-1.5	-2.4
10. cc.	-2.6	-1.6	-4.4	3.0
11. mh.	-0.3	-0.8	0.3	-1.0
12. gh.	0.1	-0.8	0.0	-0.7
13. rj.	1.3	-0.3	2.0	0.4
14. lj.	-0.5	-0.4	-1.3	-1.1
15. mmc.	-0.5	-1.3	-1.3	-1.9
16. hm	1.3	-0.1	3.6	1.2
17. dn.	1.0	0.0	0.7	-0.1
18. ar.	0.2	-1.2	0.5	-1.8
19. lw.	-1.8	-0.3	-0.8	-0.9
20. ww.	0.4	-0.5	-0.2	-0.9
Mean	.10	-.15	-.35	-.55

N = 20

*Grade Norm - 1938 = 6.8

Grade Norm - 1940 = 8.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: READING VOCABULARY

	I		II		III	
	Acceleration		Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)	(Grade Norm	Age Grade)
Pupil	1938	1940	1938	1940	1938	1940
1. ga.	-1.3	-0.7	-2.2	-1.4	-0.9	-0.7
2. rc.	1.7	-0.4	-0.5	-1.2	-2.2	-0.8
3. jc.	0.9	-0.9	0.1	-1.2	-0.8	-0.3
4. sg.	-1.4	-0.3	-1.0	-2.2	0.4	1.8
5. wh.	-1.5	-1.6	-1.3	-0.8	0.2	1.8
6. lk.	3.7	1.3	1.5	0.2	-2.2	-1.1
7. gmc.	-2.0	-1.5	-3.0	-2.2	-1.0	-0.7
8. jm.	2.7	2.9	1.3	0.6	-1.4	-2.3
9. sn.	-3.9	-6.3	-2.7	-4.1	1.2	2.2
10. cp.	1.0	0.2	0.2	-0.1	-0.8	-0.3
11. gp.	-1.0	-1.4	-1.7	-0.9	-0.7	0.5
12. lp.	-2.2	-1.5	-2.5	-2.0	-0.3	-0.5
13. hs.	-0.5	-0.7	-1.2	-1.8	-0.7	-1.1
14. jt.	-2.8	2.4	-1.3	1.3	1.5	-3.7
Mean	-.48	-.62	-1.30	-1.19	-.39	-.39

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: READING COMPREHENSION

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. ga.	-0.6	0.3	-1.5	-0.4
2. rc.	1.2	-0.1	-1.0	-0.9
3. jc.	-1.5	-0.6	-2.3	-0.9
4. sg.	-1.4	-3.9	-3.0	-3.1
5. wh.	-1.5	-1.5	-1.3	-0.7
6. lk	1.7	0.9	-0.5	-0.2
7. gmc	-0.4	-1.9	-1.4	-2.6
8. jm.	1.8	2.7	0.4	0.4
9. sn.	-3.1	-5.1	-1.9	-2.9
10. cp.	0.1	0.7	-0.7	0.4
11. gp.	-1.6	-3.3	-2.3	-2.8
12. lp.	-2.2	-3.0	-2.5	-3.5
13. hs.	-0.7	0.1	-1.4	-1.0
14. jt.	-2.6	-0.3	-1.1	1.0
Mean	-.83	-.69	-1.33	-1.12

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: ARITHMETIC REASONING

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. ga.	-0.4	-0.9	-1.3	-1.6
2. rc.	2.9	1.1	0.9	0.3
3. jc.	-0.1	0.2	-0.9	-0.1
4. sg.	-1.7	-3.2	-1.3	-2.4
5. wh.	-1.8	-1.2	-1.6	-1.0
6. lk.	0.8	-0.8	-1.4	-1.9
7. gmc.	-0.5	-1.2	-1.5	-1.9
8. jm.	0.5	3.1	-1.4	0.8
9. sm.	-3.4	-6.4	-2.2	-4.2
10. cp.	-1.4	-0.4	-2.2	-0.7
11. gp.	-1.6	-2.1	-1.3	-1.6
12. lp.	-1.6	0.9	-1.9	0.4
13. hs.	-2.0	0.3	-2.7	-0.8
14. jt.	-2.6	-3.5	-1.1	-2.2
Mean	-.90	-.69	-1.55	-1.20

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: ARITHMETIC FUNDAMENTALS

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. ga.	-1.8	-3.1	-2.7	-3.8
2. rc.	0.9	-1.2	-1.3	-2.0
3. jc.	-1.4	-1.6	-2.2	-1.9
4. sg.	-2.9	-4.9	-2.5	-4.1
5. wh.	-3.0	-5.1	-2.8	-4.3
6. lk.	-0.2	-2.5	-2.4	-3.6
7. gmc.	-1.9	-4.1	-2.9	-4.8
8. jm.	0.9	0.7	-0.5	-1.6
9. sn.	-4.3	-6.9	-3.1	-4.7
10. cp.	1.1	-0.7	0.3	-1.0
11. gp.	-1.6	-3.9	-2.3	-3.4
12. lp.	-0.9	-0.8	-1.2	-1.3
13. hs.	-0.5	-1.7	-1.2	-2.8
14. jt.	-2.8	-3.3	-1.3	-3.2
Mean	-1.26	-1.55	-1.20	-2.13

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: LANGUAGE

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. ga.	-2.4	-2.9	-3.0	-3.6
2. rc.	0.1	-2.6	-2.1	-3.4
3. jc.	0.2	-0.3	-0.6	-0.6
4. sg.	-2.9	-5.0	-2.5	-4.2
5. wh.	-1.7	-2.4	-1.5	-1.6
6. lk.	2.0	-2.0	-0.2	-1.6
7. gmc.	-0.5	-0.4	-1.5	-1.1
8. jm.	0.6	1.7	-0.4	-0.6
9. sn.	-4.2	-6.9	-3.0	-4.7
10. cp.	0.8	0.5	0.0	0.2
11. gp.	-1.4	-3.5	-2.1	-3.0
12. lp.	-2.8	-3.9	-3.1	-4.4
13. hs.	-2.3	-3.2	-3.0	-4.3
14. jt.	-3.5	-4.9	-2.0	-3.6
Mean	-.28	-1.84	-.26	-1.58

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX B

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES SEVEN AND NINE

SUBJECT: TOTAL

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. ga.	-1.6	-1.9	-2.5	-2.7
2. rc.	1.1	-1.0	-1.1	-1.8
3. jc.	-0.3	-0.7	-1.1	-1.0
4. sg.	-2.3	-4.2	-1.9	-3.4
5. wh.	-2.1	-2.9	-1.9	-2.1
6. lk.	1.4	-0.9	-0.8	-2.0
7. gmc.	-1.3	-2.1	-2.3	-2.8
8. jm.	1.2	2.2	-0.2	-0.1
9. sn.	-4.5	-6.6	-3.3	-4.4
10. cp.	0.4	0.1	-0.4	-0.2
11. gp.	-1.4	-3.1	-2.1	-2.6
12. lp.	-2.0	-1.6	-2.3	-2.1
13. hs.	-1.3	-1.4	-2.0	-2.5
14. jt.	-3.0	-3.6	-1.5	-2.3
Mean	-1.12	-1.55	-.55	-2.50

N = 14

*Grade Norm - 1938 = 7.7

Grade Norm - 1940 = 9.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: READING VOCABULARY

	I		II		III	
	Acceleration		Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm	Grade Score)	(Grade Norm	Age Grade)
Pupil	1938	1940	1938	1940	1938	1940
1. sa.	2.7	1.4	0.9	-0.2	-1.8	-1.6
2. cb.	-1.7	-2.7	-1.8	-2.6	-0.1	0.1
3. mb.	-3.6	-4.4	-3.4	-4.7	0.2	0.9
4. hb.	-5.4	-2.9	-3.4	-1.5	2.0	1.2
5. cc.	0.0	-2.3	-2.3	-3.2	-2.3	-0.9
6. fc.	-1.6	-2.2	-1.9	-3.2	-0.3	-1.0
7. wc.	1.4	1.1	-0.9	-0.9	-2.3	-2.0
8. jc.	2.7	1.5	1.1	0.3	-1.6	-1.2
9. eg.	-1.8	-2.6	-2.1	-3.6	-0.3	-1.0
10. cj.	-2.0	-3.3	-2.2	-3.2	-0.2	0.1
11. ap.	-2.0	-3.3	-2.1	-3.3	-0.1	0.0
12. cr.	-0.2	-1.2	-0.5	-1.3	-0.3	-0.1
13. bs.	-1.0	-2.7	-2.5	-3.0	-1.5	-0.3
14. os.	-4.2	-4.6	-3.5	-3.6	0.7	1.0
15. ss.	1.3	0.1	0.4	-0.5	-0.9	-0.6
16. aw.	-3.1	-1.3	-4.1	-1.0	-1.0	-0.7
17. jw.	0.5	-0.3	-1.0	-1.5	-1.5	-1.2
18. cy.	3.9	1.9	0.6	-0.3	-3.3	-2.2
19. mc.	-0.6	-0.1	-1.0	-0.8	-1.0	-0.7
Mean	-.76	-1.55	-1.50	-2.24	-.14	-.35

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: READING COMPREHENSION

	I		II	
	Acceleration		Acceleration	
	(Grade Score	Age Grade)	(Grade Norm*	Grade Score)
Pupil	1938	1940	1938	1940
1. sa.	2.1	0.8	-1.7	-0.8
2. cb.	-2.1	-3.0	-4.2	-2.9
3. mb.	-2.9	-5.9	4.7	-5.0
4. hb.	-4.1	-6.3	-2.1	-3.1
5. cc.	1.0	-0.5	-1.3	-0.9
6. fc.	-1.5	-0.3	-1.8	-0.7
7. nc.	1.9	0.8	-0.4	-1.2
8. jc.	3.0	-0.9	-1.4	-0.3
9. eg.	-2.1	-3.5	-2.2	-4.5
10. cj.	-1.4	-2.5	-1.6	-2.4
11. ap.	-1.3	-2.9	-1.4	-2.9
12. cr.	-1.8	-1.1	-2.1	-1.2
13. bs.	0.2	-1.1	-1.3	-1.2
14. os.	-3.7	-4.6	-3.0	-3.6
15. ss.	2.3	0.1	1.4	0.5
16. aw.	-1.5	-2.2	-2.5	-2.9
17. jw.	0.8	0.0	-0.7	-1.2
18. cy.	4.5	2.3	1.2	0.1
19. mc.	0.1	-0.1	-0.9	-0.8
Mean	-.34	-1.58	-1.07	-1.81

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: ARITHMETIC REASONING

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. sa.	2.3	0.8	0.5	-0.8
2. cb.	-1.1	-3.2	-1.2	-3.1
3. mb.	-1.7	-3.4	-1.5	-2.5
4. hb.	-3.7	-4.4	-1.7	-3.2
5. cc.	-1.7	0.6	-0.6	-0.3
6. fo.	-0.3	-1.2	-0.6	-2.2
7. wc.	1.9	0.2	-0.4	-1.8
8. jc.	2.7	0.1	1.1	-1.1
9. eg.	-1.1	-2.7	-1.4	-3.7
10. cj.	-2.1	-3.6	-2.3	-3.5
11. ap.	-1.0	-1.1	-1.1	-1.1
12. cr.	-1.1	-3.1	-1.2	-3.2
13. bs.	0.9	-0.7	-0.6	-1.3
14. os.	-2.1	-3.0	-1.4	-2.0
15. ss.	-0.3	-0.7	-0.6	-1.3
16. aw.	0.2	-1.1	-0.8	-1.8
17. jw.	0.7	-0.8	-0.8	-2.0
18. cy.	4.4	1.9	1.1	-0.3
19. mc.	0.6	-1.5	-0.4	-2.2
Mean	-.28	-1.55	-.34	-.98

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: ARITHMETIC FUNDAMENTALS

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. sa.	0.4	-3.0	-1.4	-4.8
2. cb.	-1.7	-4.6	-1.8	-4.5
3. mb.	-3.0	-6.1	-2.8	-5.2
4. hb.	-5.0	-6.7	-3.8	-5.3
5. cc.	0.1	-4.1	-2.2	-5.0
6. fc.	-0.1	-1.7	-0.4	-2.7
7. wc.	-1.4	-1.8	-0.8	-3.8
8. jc.	0.9	-2.1	-0.7	-3.3
9. eg.	-1.9	-3.9	-2.2	-4.9
10. cj.	-3.1	-5.3	-3.3	-5.4
11. ap.	-1.6	-4.7	-1.7	-4.7
12. cr.	-3.0	-5.3	-3.3	-5.4
13. bs.	-0.9	-5.0	-2.4	-5.3
14. os.	-2.2	-4.9	-4.5	-3.9
15. ss.	-0.4	-3.9	-1.3	-4.5
16. aw.	-1.7	-4.1	-2.7	-4.8
17. jw.	-0.2	-3.0	-1.7	-4.2
18. cy.	3.4	-0.7	0.1	-2.9
19. mc.	-0.6	-3.6	-1.6	-4.3
Mean	-1.28	-2.19	-1.29	-2.71

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: LANGUAGE

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. sa.	1.0	0.2	-0.8	-0.4
2. cb.	-1.1	-3.1	-1.2	-1.8
3. mb.	-2.9	-5.6	-2.7	-4.8
4. hb.	-5.5	-5.1	-3.5	-4.6
5. cc.	-1.5	-2.6	-3.8	-4.6
6. fc.	-1.4	-1.5	-1.7	-2.5
7. wc.	0.0	0.3	-2.3	-1.9
8. jc.	2.6	0.1	1.0	-1.2
9. eg.	-2.9	-3.3	-3.2	-4.1
10. cj.	-2.4	-3.9	-2.6	-3.8
11. ap.	-3.0	-3.3	-3.1	-3.6
12. cr.	-3.5	-3.6	-3.8	-4.8
13. bs.	0.6	-2.8	-0.9	-1.9
14. os.	3.9	-4.6	-3.2	-4.1
15. ss.	1.3	-1.1	0.4	-0.9
16. aw.	-2.1	-2.3	-3.1	-3.5
17. jw.	-0.7	-1.3	-2.2	-2.3
18. cy.	3.0	1.3	-0.3	-0.8
19. mc.	1.1	-0.7	0.1	-2.7
Mean	-.65	-2.33	-1.13	-2.29

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

APPENDIX C

TABLE SHOWING AMOUNT OF ACCELERATION OR RETARDATION FOR EACH PUPIL OF GRADES EIGHT AND TEN

SUBJECT: TOTAL

	I		II	
	Acceleration		Acceleration	
	(Grade Score Age Grade)		(Grade Norm* Grade Score)	
Pupil	1938	1940	1938	1940
1. sa.	1.5	0.2	-0.3	-1.4
2. cb.	-1.6	-3.1	-1.7	-3.0
3. mb.	-3.0	-5.6	-2.8	-4.7
4. hb.	-5.0	-5.3	-2.6	-3.9
5. cc.	-0.1	-2.6	-2.4	-3.5
6. fc.	-1.0	-1.5	-1.3	-2.5
7. wc.	0.3	-1.1	-1.7	1.2
8. jc.	2.3	0.1	0.7	-1.1
9. eg.	-2.1	-3.3	-2.4	-4.3
10. cj.	-2.4	-3.9	-2.6	-3.8
11. ap.	-2.0	-3.3	-2.1	-3.3
12. cr.	-2.2	-3.6	-2.5	-3.7
13. bs.	-0.2	-2.8	-1.7	-3.1
14. os.	-3.4	-4.2	-2.7	-3.6
15. ss.	0.3	-1.1	-0.6	-1.7
16. aw.	-1.9	-2.3	-2.9	-3.0
17. jw.	0.1	-1.3	-1.4	-2.6
18. cy.	3.7	1.3	0.4	-0.9
19. mc.	0.1	-1.7	-0.9	-2.4
Mean	-.81	-2.32	-1.41	-2.31

N = 19

*Grade Norm - 1938 = 8.8

Grade Norm - 1940 = 10.8

B Intermediate Battery
Grades 7, 8, and 9

PROGRESSIVE ACHIEVEMENT TESTS—INTERMEDIATE BATTERY Form B

(Diagnostic Tests keyed to the Curriculum)

Devised by Ernest W. Tiegs, Dean, University College, University of Southern California, and Willis W. Clark, Director of Research and Guidance, Los Angeles County Schools.

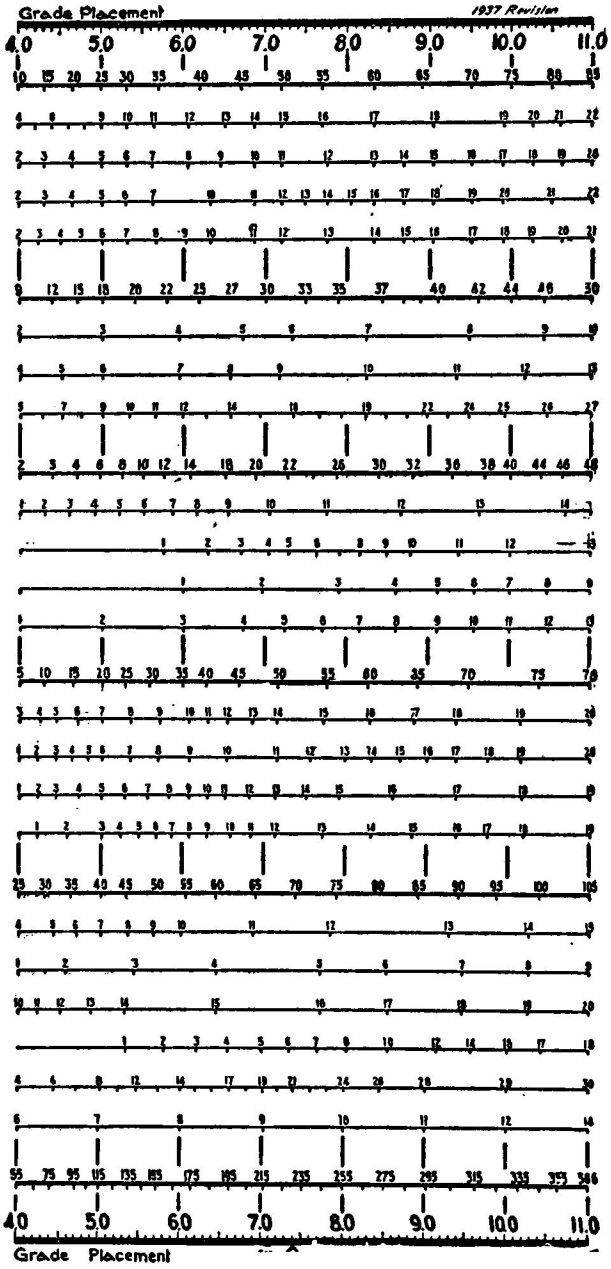
Name..... Grade..... Sex B-G

School..... Age..... Birthday.....

Teacher..... Date.....

TEST	SUBJECT	Possible Score	Pupil's Score	Grade Placement
1.	Reading Vocabulary	90		
	A. Mathematics	22		
	B. Science	23		
	C. Social Science	23		
	D. General	22		
2.	Reading Comprehension	55		
	E. Following Directions	10		
	F. Organization	15		
	G. Interpretations	30		
3.	Arithmetic Reasoning	55		
	A. Number Concept	15		
	B. Symbols and Rules	15		
	C. Numbers and Equations	10		
	D. Problems	15		
4.	Arithmetic Fundamentals	80		
	E. Addition	20		
	F. Subtraction	20		
	G. Multiplication	20		
	H. Division	20		
5.	Language	110		
	A. Capitalization	15		
	B. Punctuation	10		
	C. Words and Sentences	20		
	D. Parts of Speech	20		
	E. Spelling	30		
	F. Handwriting	15		
TOTAL		390		

DIAGNOSTIC PROFILE
(Chart Pupil's Scores Here)



Published by California Test Bureau
3636 Beverly Boulevard, Los Angeles, California

DIAGNOSTIC ANALYSIS OF LEARNING DIFFICULTIES

If the diagnostic profile on the first page of this test indicates that the pupil is making normal progress in all fields the teacher will have no use for the following diagnostic analysis. However, where the diagnostic profile shows achievement below a desirable standard in one or more major fields, the following device will assist in isolating and analyzing the specific causes of difficulty as a basis for remedial instruction.

The Roman numerals and capital letters in the diagnostic anaylsis correspond to the sections of the test similarly marked. For example, if the diagnostic profile shows unsatisfactory achievement in Test IV, Sec. E (addition in arithmetic fundamentals) an inspection of the unsatisfactory responses in this section of the test (by number) will reveal whether or not remedial instruction is needed in carrying, use of zeros, reducing to common denominators, and the like. These topics are then checked by the teacher as the basis for remedial work.

Once an adequate diagnosis has been made, remedial instruction is frequently a simple matter. However, teachers have in the past found the clerical work incident to following each individual pupil a heavy burden. Such extra work is almost completely eliminated if this diagnostic analysis is torn from the test booklet and kept on the teacher's desk, where the various items may be checked off as the pupil masters them.

READING

1. Reading Vocabulary

A. MATHEMATICS:
- ——Basic vocabulary 1-22

B. SCIENCE:
- ——Basic vocabulary 1-23

C. SOCIAL SCIENCE:
- ——Basic vocabulary 1-23

D. LITERATURE:
- ——Basic vocabulary 1-23

2. Reading Comprehension

E. FOLLOWING SPECIFIC DIRECTIONS:
- ——Directions requiring simple choice 1-2
- ——Reading definitions and following directions 3-10

F. ORGANIZATION:
- ——Parts of book.....1-5
- ——Use of table of contents 6-7
- ——Use of index.....8-10
- ——Selecting references 11-15

G. INTERPRETATION OF MEANINGS:
- ——Selecting topic or Central idea 1, 8, 15
- ——Understanding directly stated facts 2, 3, 4, 7, 9, 12, 13, 14, 16, 17, 18, 20
- ——Making inferences..5, 6, 10, 11 19, 21, 22
- ——Comprehension of Author's organization of topics 23-26
- ——Sequence of events.....27-30

ARITMETIC

3. Arithmetic Reasoning

A. NUMBER CONCEPT:
- ——Writing numbers 1-5
- ——Writing money 6
- ——Writing per cent.....7
- ——Roman numbers.....8-10
- ——Concept of whole numbers 11
- ——Concept of fractions and decimals 12-14
- ——Concept of negative numbers 15

B. SYMBOLS AND RULES:
- ——Symbols 1, 2, 6-10
- ——Vocabulary 3-5
- ——Rules 11-15

C. NUMBERS AND EQUATIONS:
- ——Negative numbers 1-5
- ——Solving equations 6-10

D. PROBLEMS:
- ——Two-step Problems 1-3
- ——Sharing and averaging.....1-3
- ——Square and cubic measure 4-7
- ——Commission and discount 13-15
- ——Percentage 9-12
- ——Ratio 8

4. Arithmetic Fundamentals

E. ADDITION:
- ——Simple combinations 1-2
- ——Carrying 3-6
- ——Zeros 2-8
- ——Column addition 4-6
- ——Adding money 6, 8
- ——Denominate numbers 6-8
- ——Adding fractions 9-15
- ——Reducing fractions to common denom.....10, 12-15
- ——Adding mixed numbers 11-15
- ——Adding fractions and decimals 16-17
- ——Writing decimals in column 18-19
- ——Adding percentages 20

F. SUBTRACTION:
- ——Simple combinations 1-2
- ——Borrowing 3-7
- ——Zeros 2, 4, 5
- ——Subtracting money 6-7
- ——Denominate numbers 6-8
- ——Subtracting numerators....9-10
- ——Reducing fractions to common denominators....11-12
- ——Borrowing with mixed numbers 13-15
- ——Subtracting fractions from decimals 16-17
- ——Writing decimals in column 18-19
- ——Fractional parts 20

G. MULTIPLICATION:
- ——Tables 1-7
- ——Zeros in multiplicand 3, 6, 7
- ——Zeros in multiplier 5, 6, 7
- ——Two-place multipliers 4-7
- ——Denominate numbers 8
- ——Concellation of fractions 9, 11-15
- ——Mult. num. and denom 10
- ——Fractions and mixed numbers 13-16
- ——Fractions and decimals.....17
- ——Pointing off decimals....18, 19
- ——Per cent of number.....20

H. DIVISION:
- ——Tables 1-7
- ——Zeros in quotient.....2, 6
- ——Remainders 7
- ——Inverting divisor in fractions 8-15
- ——Mixed numbers 13-15
- ——Reducing fractions to decimals 16
- ——Pointing off decimals.....17-19
- ——Fractional parts 20

LANGUAGE

5. Language

A. CAPITALIZATION:
- ——First word of sentence.....1-2
- ——Names of persons.....4, 8
- ——Names of places.....4, 7
- ——Days of week and months 3, 6, 8
- ——Abbreviations for months.....3
- ——Title of book.....5
- ——First word of quotation.....9
- ——Over capitalization.....

B. PUNCTUATION:
- ——Periods .....
- ——Commas .....
- ——Question marks .....
- ——Quotation marks .....
- ——Quotation within quotation.....
- ——Over punctuation .....

C. WORDS AND SENTENCES:
- ——Singulars and plurals 1-2
- ——Case 6-8
- ——Tense 3-5
- ——Good usage 9-10
- ——Recognizing sentences 11-20

D. PARTS OF SPEECH:
- ——Nouns
- ——Pronouns
- ——Verbs
- ——Adjectives
- ——Adverbs
- ——Conjunctions
- ——Prepositions

E. SPELLING:
- ——
- ——
- ——
- ——

F. HANDWRITING:
- ——Legibility .....

TEST 1. SEC. A

Directions: Underline the word which means the **opposite or about the opposite** of the first word. Write its number on the line to the right.

0. **large** [1] ugly [2] small [3] good [4] walk 2 0

1. **buy** [1] between [2] matter [3] sell [4] point ____ 1
2. **whole** [1] section [2] three [3] young [4] sight ____ 2
3. **gain** [1] board [2] doubt [3] instead [4] loss ____ 3
4. **divide** [1] game [2] double [3] stock [4] throw ____ 4
5. **debt** [1] credit [2] frequent [3] palace [4] observe ____ 5
6. **scarce** [1] plenty [2] lease [3] swift [4] remove ____ 6
7. **principal** [1] secure [2] interest [3] section [4] praise ____ 7
8. **surface** [1] action [2] lodge [3] distance [4] interior ____ 8
9. **borrow** [1] loan [2] design [3] locate [4] harness ____ 9
10. **curve** [1] passage [2] temper [3] straight [4] relate ____10
11. **cash** [1] zone [2] credit [3] mend [4] absent ____11
12. **peak** [1] fortress [2] base [3] drank [4] director ____12
13. **origin** [1] dipper [2] cradle [3] calamity [4] termination ____13
14. **negative** [1] positive [2] cataract [3] ecstasy [4] hypocrite ____14
15. **unequal** [1] merciless [2] outdoor [3] equivalent [4] scamper ____15
16. **horizontal** [1] scenery [2] tour [3] narrative [4] vertical ____16
17. **revenue** [1] receipt [2] expenditure [3] dishonest [4] money ____17
18. **solid** [1] angle [2] original [3] plane [4] investment ____18
19. **cancel** [1] record [2] zero [3] retreat [4] edge ____19
20. **accumulate** [1] dispense [2] casualty [3] stanza [4] apprehensive ____20
21. **obtuse** [1] triangle [2] acute [3] immense [4] flat ____21
22. **cylinder** [1] bucket [2] tank [3] prism [4] encircle ____22

Sec. A. Score (number right).....

TEST 1. SEC. B

Directions: Underline the word which **means the opposite or about the opposite of the first word.** Write its number on the line to the right.

0. **large** [1] ugly [2] small [3] good [4] walk 2 0

1. **summer** [1] year [2] time [3] winter [4] river ____ 1
2. **unite** [1] bleach [2] separate [3] tie [4] annex ____ 2
3. **flexible** [1] brittle [2] decay [3] similar [4] harsh ____ 3
4. **expand** [1] compress [2] nature [3] accidental [4] hose ____ 4
5. **construction** [1] cluster [2] destruction [3] frozen [4] fertile ____ 5
6. **positive** [1] external [2] separate [3] rafter [4] negative ____ 6
7. **medicine** [1] sterile [2] total [3] poison [4] rivulet ____ 7
8. **reduce** [1] ascend [2] increase [3] contract [4] melt ____ 8
9. **furnace** [1] definite [2] spring [3] consume [4] refrigerator ____ 9
10. **torrid** [1] narrow [2] frigid [3] electric [4] rigid ____10
11. **root** [1] food [2] stem [3] ground [4] green ____11
12. **rind** [1] core [2] dell [3] huff [4] origin ____12
13. **sanitary** [1] shorten [2] noxious [3] bleach [4] synthesis ____13
14. **vertical** [1] concave [2] convex [3] horizontal [4] bisect ____14
15. **rigid** [1] gravity [2] repel [3] expand [4] pliant ____15
16. **magnify** [1] detract [2] indigo [3] naught [4] process ____16
17. **diffused** [1] separated [2] heated [3] concentrated [4] cooled ____17
18. **sever** [1] staple [2] compact [3] rave [4] identify ____18
19. **portable** [1] soot [2] conserve [3] stationary [4] minor ____19
20. **external** [1] internal [2] sterile [3] element [4] accidental ____20
21. **botany** [1] nature [2] zoology [3] biology [4] plants ____21
22. **volatile** [1] stable [2] fertile [3] visible [4] molten ____22
23. **generator** [1] pump [2] motor [3] horsepower [4] amperes ____23

Sec. B. Score (number right).....

TEST 1. SEC. C

Directions: Underline the word which means the **opposite or about the opposite** of the first word. Write its number on the line to the right.

0. **large** [1] rich [2] small [3] gone [4] away 2 0

1. **city** [1] country [2] burn [3] follow [4] land ____ 1
2. **labor** [1] paper [2] quick [3] capital [4] army ____ 2
3. **master** [1] next [2] slave [3] important [4] article ____ 3
4. **village** [1] report [2] sudden [3] narrow [4] city ____ 4
5. **union** [1] separation [2] action [3] imagine [4] accompany ____ 5
6. **justice** [1] owe [2] injustice [3] kingdom [4] feather ____ 6
7. **attack** [1] avenue [2] district [3] defend [4] shower ____ 7
8. **conquered** [1] victorious [2] tremble [3] manage [4] overthrow ____ 8
9. **monarch** [1] subject [2] convenient [3] foundation [4] joint ____ 9
10. **league** [1] model [2] liven [3] discord [4] virtue ____ 10
11. **worship** [1] proclaim [2] scoff [3] territory [4] draft ____ 11
12. **vanquish** [1] climate [2] falter [3] guilty [4] pillow ____ 12
13. **dissolve** [1] bought [2] county [3] organize [4] scorn ____ 13
14. **servitude** [1] independence [2] hobby [3] displeasure [4] commotion ____ 14
15. **traitor** [1] moral [2] legion [3] liquor [4] advocate ____ 15
16. **agreement** [1] loathe [2] interval [3] hazel [4] dissension ____ 16
17. **breach** [1] denounce [2] invert [3] alliance [4] edifice ____ 17
18. **cooperation** [1] preliminary [2] opposition [3] nameless [4] illustration ____ 18
19. **information** [1] union [2] courageous [3] exemption [4] ignorance ____ 19
20. **revoke** [1] vote [2] empower [3] pursue [4] illuminate ____ 20
21. **surrender** [1] stupid [2] readily [3] reserve [4] mule ____ 21
22. **minor** [1] tenor [2] adult [3] yeast [4] censor ____ 22
23. **vassal** [1] serpent [2] vagabond [3] king [4] insane ____ 23

Sec. C. Score (number right).....

TEST 1. SEC. D

Directions: Underline the word which means the **opposite or about the opposite** of the first word. Write its number on the line to the right.

0. **large** [1] rich [2] small [3] gone [4] away 2 0

1. **voice** [1] speechless [2] present [3] theme [4] liberty ____ 1
2. **complete** [1] unity [2] incomplete [3] initial [4] trace ____ 2
3. **past** [1] revelation [2] blame [3] future [4] direct ____ 3
4. **question** [1] wallet [2] answer [3] flier [4] infest ____ 4
5. **loose** [1] indirect [2] absent [3] cause [4] tied ____ 5
6. **wit** [1] stupidity [2] origin [3] effect [4] final ____ 6
7. **sacrifice** [1] decline [2] negative [3] vocal [4] create ____ 7
8. **original** [1] silent [2] duplicate [3] negative [4] gentle ____ 8
9. **poem** [1] prose [2] fidelity [3] epic [4] abject ____ 9
10. **liberal** [1] pleasant [2] free [3] commendation [4] frugal ____ 10
11. **masculine** [1] man [2] peasant [3] feminine [4] length ____ 11
12. **shrewd** [1] simple [2] passive [3] dizzy [4] hustle ____ 12
13. **fail** [1] proceed [2] recede [3] agree [4] succeed ____ 13
14. **tranquil** [1] Christian [2] violent [3] serene [4] definite ____ 14
15. **transient** [1] precocious [2] declension [3] permanent [4] formal ____ 15
16. **ponderous** [1] subtle [2] slow [3] magnificent [4] small ____ 16
17. **disciple** [1] revelation [2] novice [3] teacher [4] vocal ____ 17
18. **sanction** [1] allow [2] restraint [3] decide [4] abject ____ 18
19. **melodious** [1] discordant [2] clever [3] discreet [4] pleasant ____ 19
20. **predecessor** [1] gobbler [2] leader [3] successor [4] escort ____ 20
21. **grotesque** [1] seldom [2] normal [3] story [4] rare ____ 21
22. **superficial** [1] rough [2] shallow [3] profound [4] decline ____ 22

Sec. D. Score (number right).....

TEST 2. SEC. E

Read the following directions. Do as you are told in each case. Underline the answer and write the number (or letter) of the answer on the line to the right.

1. Read the following names:

   Mary Robert Charles Louise

   The first letters of the girls' names are:

   [1] MR [2] CL [3] RC [4] ML

   Write the number of the answer here: ———1

2. Read these numbers:

   6 7 5 2 5 9 6 3 9 5

   The third number after two is:
   [a] 5 [b] 6 [c] 7 [d] 9

   Write the letter of the answer here: ———2

3. The area of a rectangle is found by multiplying the base by the altitude. Find the area, or the number of square feet, in a rectangle which has a base of 8 ft. and an altitude of 4 ft. The answer is:
   [a] 32 [b] 24 [c] 48 [d] 36 ———3

4. Longitude is the distance east or west of the prime meridian on the earth's surface.
   In the following ship's reading, the letter preceding the statement which indicates longitude is:
   (a) South 10° 19′ 30″
   (b) West 2° 48′ 10″
   (c) North 3° 47′ 25″ ———4

5. American is the proper adjective derived from the proper noun America. The number of the word which is the proper adjective of the proper noun Russia is:
   [1] Russia's [2] Russia [3] Russian ———5

6. Regular adverbs are formed by adding **ly** to the adjective such as beautiful, beautifully. The number of the word which gives the adverb formed by the regular adjective great is:
   [1] greatly [2] greatest [3] greater ———6

Go right on to the next column

7. Words ending in **y**, when the **y** is preceded by a consonant, changes the **y** to **i** before any suffix except one beginning with **i**; as, icy, icily. The number of the word which has the suffix **ly** correctly added to the word merry is:
   [1] merry [2] merryly [3] merrily ———7

8. Silent **e** final is usually retained before a suffix beginning with a consonant; as dire, direful. The number of the word which has the suffix **ful** correctly added to the word use is.
   [1] usefull [2] useful [3] usful ———8

9. Read the following recipe:
   2½ cups sugar
   2 squares chocolate
   1 tablespoon butter
   1 cup milk
   1 teaspoon vanilla
   Take the sugar and add grated chocolate; add milk and butter and boil slowly until the candy forms a soft ball in water. Take off the fire, add the vanilla and beat until creamy and then pour the mixture into a buttered pan. The number of the item which is the third thing to be used in mixing the above recipe is:
   [1] chocolate [2] butter [3] sugar [4] milk ———9

10. The length of the diagonal line in a rectangle is found by adding the square of the base to the square of the altitude and then extracting the square root of this sum. The letter which indicates the length in inches of the diagonal of a rectangle whose base is 3 inches and whose altitude is 4 inches is: (Three squared is 9, 4 squared is 16, and 5 is the square root of 25.)
    [a] 9 [b] 7 [c] 5 [d] 12 ———10

Sec. E. Score (number right)_____

TEST 2. SEC. F

Directions: Underline the correct answer. Write its number (or letter) on the line to the right.

1. The title is found in what part of the book?
   [1] beginning [2] middle [3] end —— 1

2. The appendix is found in what part of the book?
   [1] beginning [2] middle [3] end —— 2

3. A glossary contains:
   [1] index [2] definitions [3] pictures —— 3

4. The bibliography is found in what part of the book or chapter?
   [1] beginning [2] middle [3] end —— 4

5. A preface is found in what part of the book?
   [1] beginning [2] middle [3] end —— 5

Look at the following:

TABLE OF CONTENTS

6. On what page does "The Cotton Fields" begin.
   [a] 1 [b] 22 [c] 76 [d] 13 —— 6

7. To which chapter would the materials on page 83 belong?
   [1] Cotton Growing.
   [2] Classification of Crops.
   [3] Modern Spinning and Weaving. —— 7

Go right on to the next column

Look at this index and find the answers to questions 8, 9, and 10.

INDEX

8. Information concerning Barcelona will be found on what page?
   [a] 112 [b] 234 [c] 379 [d] 336 —— 8

9. Information concerning bananas in Mexico will be found on what page?
   [a] 204 [b] 228 [c] 252 [d] 316 —— 9

10. Information concerning barley in Denmark will be found on what page?
    [a] 307 [b] 417 [c] 345 [d] 336 —— 10

Underline the two best topics to look up in an encyclopedia or reference book for information on the following subjects. Write the two numbers on the line to the right.

11. Cattle Raising in Texas.
    [1] Texas [2] Animal Husbandry
    [3] Cattle [4] Farming [5] Meat —— 11

12. Cotton Growing in Louisiana.
    [1] Spinning [2] Cotton [3] Louisiana
    [4] Weaving [5] The Cotton Gin —— 12

13. Trans-Atlantic Communication by Telephone.
    [1] Radio [2] Telephone
    [3] Inventors [4] Cables
    [5] Newspapers —— 13

14. Destructive Insects in the Cotton Industry.
    [1] Agriculture [2] Industry
    [3] Cotton [4] Destruction [5] Pests —— 14

15. The Football Game in America.
    [1] Schools [2] Leagues [3] Football
    [4] Games [5] America —— 15

Sec. F. Score (number right).....

TEST 2. SEC. G

Read this story:

In early American times, forests were the principal source of material for shelter. Trees were available in abundance and provided lumber for houses and a means of constructing refuges from the savages.

As it was necessary to build homes and clear the land of trees, lumbering was the first industry in America. The first saw-mills were located at Jamestown, Virginia, and Berwick, Maine, in 1625 and 1631, respectively. These early mills were operated by water-power and produced only a few hundred board feet of lumber a day.

With further development of the country, there were increasing demands for lumber. New and efficient machinery and improved methods developed with astonishing rapidity. As the forests were cleared away it became impossible for the lumbermen to live at home, and resulted in the development of the lumber camp, which in its early stages was a crude and unwholesome place.

During recent years there has been a more satisfactory development of the industry. The lumber camp has been replaced by the lumber-town, which is modern and up-to-date. Methods of reforestation and scientific planting of trees have been introduced and have brought non-productive land back into use. Modern building programs require much less lumber than during past decades, due to the use of steel and cement, and the future of the lumber industry is, therefore, somewhat uncertain.

Draw a line under the correct answer. Write its number on the line to the right.

1. The best title for this story is:
   [1] forests [2] shelter [3] lumber —— 1
2. As an early American industry, lumbering was:
   [1] first [2] second [3] third —— 2
3. In 1625, the first saw-mill was located in:
   [1] Jamestown [2] Berwick [3] Maine [2] —— 3
4. Each day early-constructed mills produced the following number of board-feet:
   [1] about fifty [2] several hundred
   [3] several thousand —— 4

Go right on to the next column

TEST 2. SEC. G (Continued)

5. Non-productive land has been utilized by:
   [1] burning [2] reforestation
   [3] standing idle —— 5
6. Forests, due to scientific treatment, have been:
   [1] decreased [2] preserved
   [3] arrested —— 6
7. Production of lumber has decreased due to use of:
   [1] steel [2] apartments
   [3] automobiles —— 7

Read this story:

The orange is a small evergreen tree with dark green oval leaves, white fragrant flowers, and golden-yellow, pleasantly flavored fruit. The flower and fruit in all stages of development are often found on the same tree at the same time.

The orange is a native of Southern China where it was under cultivation during the Middle Ages. About 1500 A. D. orange culture spread rapidly throughout warm regions. It is now the most important citrus fruit and is very extensively grown in the Mediterranean countries, India, Japan, the East Indies, Jamaica, and Brazil. In the United States, California and Florida are the leading producers, although some oranges are grown in Louisiana, Alabama, Texas, and Arizona. In 1929, records show that the number of boxes of oranges produced in the United States was as follows:

	Number of Boxes	Per Cent
California	27,694,000	71.9
Florida	10,360,000	26.9
Louisiana	171,000	0.5
Alabama	107,000	0.3
Arizona	84,000	0.2
Other States	82,000	0.2
Total	38,498,000	100.00

The principal uses of the orange are to provide a dessert fruit and a refreshing drink. Orange peel is used in making marmalade, in flavoring, and as a candied confection. Bridal wreathes are frequently made from the blossoms. Orange-flower water and orange-leaf oil are ingredients in perfumes, and the fine-grained yellow wood of the tree is valuable for turnery and inlaid work.

Go right on to the next page

Draw a line under the correct answer. Write its number on the line to the right.

8. The best title for this story is:
[1] Trees [2] The Value of Oranges
[3] Oranges ____ 8

9. The orange originated in:
[1] India [2] China [3] California ____ 9

10. The most important citrus fruit now grown is the:
[1] Grapefruit [2] Lemon [3] Orange ____10

11. The greatest number of oranges produced in 1929 was in the state of:
[1] California [2] Florida
[3] Louisiana ____11

12. About 27 per cent of the oranges were produced in:
[1] Florida [2] California
[3] Arizona ____12

13. The growth of oranges is more successful in:
[1] Moderate climate
[2] Frigid climate [3] Warm climate ____13

14. One of the by-products of oranges is:
[1] Paper [2] Perfume [3] Cloth ____14

Read his story:

The *Mayflower,* in which the Pilgrims came to America, was the typical sailing vessel of its time. It was a three-masted ship, one hundred feet long and twenty-five feet wide. As late as the beginning of the nineteenth century the ships owned by merchants, lumbermen, and fishermen were of the same type as the colonial *Mayflower* and were adequate for the requirement of that time.

In the middle of the nineteenth century, England began using steamships and iron vessels. They were much faster and soon outclassed the colonial-type of sailing vessel. In order to maintain a hold in competitive shipping, is was necessary for the Americans to build some sort of ship that was faster and easier to handle. This resulted in the American "clipper ship", which for a time was able

Go right on to the next column.

to compete successfully with the English. With the further development of steamships, however, this type of vessel was hopelessly outclassed.

By the beginning of the twentieth century, the steamship had reached a remarkable stage of development. In the succeeding thirty years, the ships increased in size as well as in luxury. The *Mauretania,* launched in 1908, was considered a marvel because it weighed nearly 30,700 tons. It held the trans-Atlantic speed record of five and one-half days for twenty years. Each year, however, brought changes in ships, with increased weight and speed, until in 1929 the *Bremen* was built and crossed the Atlantic in nine hours less time than the previous record holder. The *Queen Mary* and the *Normandie* have recently exceeded the 1929 record by about 24 hours.

Draw a line under the correct answer. Write its number on the line to the right.

15. The above story is about:
[1] Pilgrims [2] *Mayflower* [3] Ships ____15

16. In the 19th century the Americans built the:
[1] *Mayflower*
[2] clipper ship
[3] *Bremen* ____16

17. American shipping was stimulated through competition with:
[1] England [2] Italy [3] Japan ____17

18. The "Clipper Ship" was able to compete successfully because it was:
[1] a steamship [2] easier to handle
[3] a passenger vessel ____18

19. The *Bremen* crossed the Atlantic in about:
[1] 5 days [2] 6 days [3] 7 days ____19

20. Succeeding in the third paragraph means:
[1] successful [2] following
[3] resulting ____20

Go right on to the next page.

TEST 2. SEC. G (Continued)

Read this story:

RADIO

In 1894, Guglielmo Marconi began a series of experiments with wireless which were the beginnings of the modern radio. He was only twenty years old, but he struggled along courageously day after day working with his apparatus and aerials in the field of his father's estate at Bologna trying to learn more about wireless.

Marconi took his apparatus to England in 1896 to demonstrate what could be done with wireless. At Salisbury Plain a message was sent and received across a span of two miles. By the end of 1897, he had flashed waves from land to a ship ten miles out at sea and then between two shore stations, Salisbury and Bath, twenty-four miles apart. After this, Marconi gradually lengthened the distance between sending and receiving points until he was able to send a message many miles. Finally in 1899, the French Government asked him to attempt sending a message across the English Channel between Dover and Boulogne. This attempt was successful, and wireless really seemed assured of great success.

As radio men look back and compare Marconi's first instrument with those in use today, the crossing of the sea by radio seems a miracle. The apparatus Marconi had was very crude compared to modern equipment. All he had for transmitting was the means of making crude damped-spark waves which did not permit the accurate and sharp-tuning methods which are in vogue today. Among the important developments were crystal sets which have been largely superseded by vacuum tubes and other modern inventions including amplifiers, sensitive superheterodyne receivers, disectional beam transmitters and a means of making continuous waves which have made possible our remakable radio programs.

The development of the radio has brought the world closer together by providing a method whereby sounds and messages can be transmitted rapidly. Through radio broadcasts, the finest of entertainment, educational programs, and speeches and messages of all kinds are brought into the homes. Also the recent development of short wave sets has made possible rapid advances in commerce, industrial relations, and crime prevention.

Go right on to the next page.

Write the number of the correct answer on the line to the right.

21. Superseded in the third paragraph means:
    [1] replaced [2] vibrated [3] unusual ____21
22. Vogue in the third paragraph means:
    [1] unusual [2] electric current [3] in use ____22

Read the eight statements below. You are to select the best title for each of the four paragraphs of the story. Write its number on the line to the right.

STATEMENTS

1. Recent improvements
2. Radio men
3. The inventor's struggle
4. In 1894
5. Effects of radio
6. Sounds and messages
7. The practical demonstration
8. Success

23. The best title for the 1st paragraph is statement:
    1 2 3 4 5 ____23
24. The best title for the 2nd paragraph is statement:
    4 5 6 7 8 ____24
25. The best title for the 3rd paragraph is statement:
    1 2 3 4 5 ____25
26. The best title for the 4th paragraph is statement:
    4 5 6 7 8 ____26

The following items or things are mentioned in the story:

Vacuum tubes
Damped-spark waves
Radio broadcasts
Crystal sets

The order in which these developments occurred is as follows:

27. Vacuum tubes were:
    1st 2nd 3rd 4th ____27
28. Damped-spark waves were:
    1st 2nd 3rd 4th ____28
29. Radio broadcasts were:
    1st 2nd 3rd 4th ____29
30. Crystal sets were:
    1st 2nd 3rd 4th ____30

Stop here

Sec. G. Score (number right).....

TEST 3. SEC. A

Write each of these numbers on the line to the right, using Arabic numerals.

0. Twelve 12 0
1. Seven hundred twenty-five. _____ 1
2. Four thousand ten. _____ 2
3. Seventy thousand eighty-two _____ 3
4. Two million twenty thousand twelve. _____ 4
5. Three-fourths. _____ 5
6. Eighty-nine dollars and eight cents. _____ 6
7. Seventy-five per cent. _____ 7

Draw a line under the correct number. Write the number on the line to the right.

8. LXXX means 30 40 80 100 ____ 8
9. DCC means 100 300 500 700 ____ 9
10. M means 500 1,000 3,000 7,000 ____ 10

Draw a line under the largest number and write it on the line to the right.

11. 25 250 145 50 _____ 11
12. $75\frac{4}{5}$ $54\frac{1}{2}$ $102\frac{1}{8}$ $45\frac{1}{3}$ _____ 12
13. .033 .065 .35 .012 _____ 13
14. $\frac{3}{4}$ $\frac{1}{2}$ $\frac{4}{5}$ $\frac{1}{10}$ _____ 14
15. $\frac{5}{6}$ $(\frac{5}{6})^2$ $(\frac{3}{4})^4$ $(\frac{7}{8})^3$ _____ 15

Sec. A. Score (number right)_____

TEST 3. SEC. B

Write the correct answer on the line to the right.

1. $\sqrt{81}$ _____ 1
2. 10% of 70 = _____ 2
3. A right angle equals how many degrees? _____ 3
4. What are the factors of 21? _____ 4
5. What is the greatest common divisor of 8, 16, 24? _____ 5

Draw a line under the correct word. Write its letter on the line to the right.

6. ° means (a) degree (b) multiply (c) per cent (d) divide _____ 6
7. % means (a) subtract (b) per cent (c) dram (d) dollar _____ 7
8. $\sqrt{}$ means (a) add (b) ounce (c) interest (d) square root _____ 8
9. $\boxed{\ }$ means (a) square (b) parallelogram (c) pyramid (d) octagon _____ 9
10. R means (a) diameter (b) radius (c) rectangle (d) rheostat _____ 10

Go right on to the next column.

These are rules used in measurement:

Rule 1. Circumference divided by 3.1416.
Rule 2. Multiply ½ base by altitude.
Rule 3. Multiply altitude by base.
Rule 4. Area divided by length.
Rule 5. Multiply the diameter by 3.1416.

Write the number of the rule which is used to find:

Width of a rectangle _____ 11
Diameter of a circle _____ 12
Area of a triangle _____ 13
Circumference of a circle _____ 14
Area of a parallelogram _____ 15

Sec. B. Score (number right)_____

TEST 3. SEC. C

Work these problems and put the answer on the line to the right.

Addition:

1. $\begin{array}{r} 27 \\ -16 \\ \hline 4 \end{array}$ _____ 1

Subtraction:

2. $\begin{array}{r} 67\text{ c} \\ 25\text{ c} \\ \hline \end{array}$ _____ 2

3. The minuend 5: the subtrahend 12; the difference is: _____ 3

Multiplication:

4. $5\ (-4) =$ _____ 4

Division:

5. $\frac{-32}{4} =$ _____ 5

Find the value of x in each of these equations. Write each answer on the line to the right.

6. $7x = 42$ _____ 6
7. $x + 7 = 15$ _____ 7
8. $x^2 = 64$ _____ 8
9. $\frac{x}{3} = 9$ _____ 9
10. $a = 6, b = 2, c = 4$, find the value of x in the following equation: $x = a + b - c$ _____ 10

Sec. C. Score (number right)_____

TEST 3. SEC. D

irections: Work these problems . Write the answer n the line to the right.

1. In a class-room there were 7 rows of desks with 7 desks in each row. Four desks were removed from the room. How many desks were left?

_____ 1

2. Henry bought a used automobile for $55.00. He paid $10.00 down and is to pay the rest in nine equal payments. How much will each payment be?

_____ 2

3. Peggy weighs 85 pounds, Bettie weighs 90 pounds, and Sally weighs 125 pounds. What is their average weight in pounds?

_____ 3

4. How many square feet in a school-room blackboard which is 4 feet wide and 10 feet long?

_____ 4

5. A box is 9 inches long, 5 inches wide, and 3 inches deep. How many cubic inches does it contain?

_____ 5

6. Find the area of a rectangle having a base of 15 ft. and an altitude of 10 ft.

_____ 6

7. Find the area of a triangle having a base of 20 in. and an altitude of 15 in.

_____ 7

8. When the scale of a map is "½ in. = 25 mi.", how far apart are two cities that are represented on a map as 1½ in. apart?

_____ 8

Go right on to the next column.

9. Sam, Bill and Jack together received $50.00. Sam received $25.00, Bill received $20.00, and Jack received $5.00. What per cent of the $50.00 did each receive?

Sam _____

Bill _____

Jack _____ 9

10. Helen had $12.00 and spent $3.00. What per cent did she spend?

_____ 10

11. A man received six per cent interest on a loan of $300.00 for one year. How much interest did he receive?

_____ 11

12. Mary missed 5 problems on a test and did 75% of them correctly. Find how many problems were in the test.

_____ 12

13. Mary solicited subscriptions for a book selling at $3.00 and got a 40% commission. How much did she make on each book sold?

_____ 13

14. A house valued at $8,000.00 was insured for 75% of its value. The rate of insurance was 25 cents per $100.00. What was the amount of the premium?

_____ 14

15. Betty's father has a furniture store. The list price of a table is $60.00 and two discounts are given, one of 20% and another of 10%. What is paid for the table?

_____ 15

Sec. D. Score (number right).....

TEST 4. SEC. E

These are problems in addition. Write your answers under the problems and also on the lines to the right.

(1)
$$\begin{array}{r} 247 \\ +632 \\ \hline \end{array}$$ _____ 1

(2)
$$\begin{array}{r} 605 \\ +340 \\ \hline \end{array}$$ _____ 2

(3)
$$\begin{array}{r} 37 \\ +35 \\ \hline \end{array}$$ _____ 3

(4)
$$\begin{array}{r} 43 \\ 39 \\ 22 \\ +86 \\ \hline \end{array}$$ _____ 4

(5)
$$\begin{array}{r} 4972 \\ 9376 \\ 1435 \\ +\ 209 \\ \hline \end{array}$$ _____ 5

(6)
$$\begin{array}{r} \$89.64 \\ 5.73 \\ 15.82 \\ +\ 5.12 \\ \hline \end{array}$$ _____ 6

(7) 4 yd. 3 ft. 6 in.
+3 yd. 2 ft. 8 in. _____ 7

(8) $\$40.00 + \$.15 + \$3 + \$1.85 =$ _____ 8

(9)
$$\begin{array}{r} \frac{1}{5} \\ +\frac{1}{5} \\ \hline \end{array}$$ _____ 9

(10)
$$\begin{array}{r} \frac{1}{3} \\ +\frac{1}{6} \\ \hline \end{array}$$ _____ 10

(11)
$$\begin{array}{r} 14 \\ +\ 3\frac{3}{4} \\ \hline \end{array}$$ _____ 11

(12)
$$\begin{array}{r} \frac{5}{8} \\ +3\ \frac{1}{2} \\ \hline \end{array}$$ _____ 12

(13)
$$\begin{array}{r} 1\ 5\frac{1}{4} \\ +\quad 2\frac{2}{3} \\ \hline \end{array}$$ _____ 13

(14)
$$\begin{array}{r} 3\frac{7}{8} \\ +4\frac{1}{3} \\ \hline \end{array}$$ _____ 14

(15)
$$\begin{array}{r} 4\ 5\frac{1}{2} \\ 1\ 5\frac{3}{4} \\ +3\ 5\frac{2}{3} \\ \hline \end{array}$$ _____ 15

(16) $4\frac{1}{2} + 4.5 =$ _____ 16

(17) $.15\frac{3}{4} + 13.5 =$ _____ 17

(18) $.03 + .156 + .3209 =$ _____ 18

(19) $45.3 + 8.12 + .0461 + 9 =$ _____ 19

(20) 10% of 50 + 10% of 70 = _____ 20

Sec. E. Score (number right)_____

TEST 4. SEC. F

These are problems in subtraction. Write your answers under the problems and also on the lines to the right.

(1)
$$\begin{array}{r} 256 \\ -143 \\ \hline \end{array}$$ _____ 1

(2)
$$\begin{array}{r} 879 \\ -305 \\ \hline \end{array}$$ _____ 2

(3)
$$\begin{array}{r} 45 \\ -16 \\ \hline \end{array}$$ _____ 3

(4)
$$\begin{array}{r} 3570 \\ -2980 \\ \hline \end{array}$$ _____ 4

(5)
$$\begin{array}{r} 7306 \\ -4869 \\ \hline \end{array}$$ _____ 5

(6)
$$\begin{array}{r} \$25.15 \\ -\ 2.75 \\ \hline \end{array}$$ _____ 6

(7) $\$300 - \$13.75 =$ _____ 7

(8)
6 da. 8 hr. 40 min.
−3 da. 10 hr. 50 min. _____ 8

(9)
$$\begin{array}{r} \frac{1}{3} \\ -\frac{1}{3} \\ \hline \end{array}$$ _____ 9

(10)
$$\begin{array}{r} \frac{2}{3} \\ -\frac{1}{3} \\ \hline \end{array}$$ _____ 10

(11)
$$\begin{array}{r} \frac{5}{6} \\ -\frac{1}{3} \\ \hline \end{array}$$ _____ 11

(12)
$$\begin{array}{r} \frac{3}{5} \\ -\frac{1}{4} \\ \hline \end{array}$$ _____ 13

(13)
$$\begin{array}{r} 5\frac{2}{7} \\ -4 \\ \hline \end{array}$$ _____ 13

(14)
$$\begin{array}{r} 9 \\ -5\frac{1}{3} \\ \hline \end{array}$$ _____ 14

(15)
$$\begin{array}{r} 4\ 5\frac{1}{8} \\ -2\ 2\frac{5}{8} \\ \hline \end{array}$$ _____ 15

(16) $40.6 - 4\frac{1}{2} =$ _____ 16

(17) $45\frac{3}{5} - 13.44 =$ _____ 17

(18) $46.260 - 34.15 =$ _____ 18

(19) $65.08 - 5.0725 =$ _____ 19

(20) $\frac{1}{5}$ of 40 − $\frac{1}{4}$ of 16 = _____ 20

Sec. F. Score (number right)_____

TEST 4. SEC. G

These are problems in multiplication. Write your answers under the problems and also on the lines to the right.

(1) 533×4 _____ 1

(2) 400×3 _____ 2

(3) 509×8 _____ 3

(4) 763×52 _____ 4

(5) 847×30 _____ 5

(6) 400×50 _____ 6

(7) 3025×607 _____ 7

(8) 4 yd. 6 ft. 5 in. $\times 6$ _____ 8

(9) $6 \times \frac{1}{4} =$ _____ 9

(10) $\frac{1}{3} \times \frac{1}{3} =$ _____ 10

(11) $\frac{1}{3} \times \frac{3}{5} =$ _____ 11

(12) $\frac{2}{5} \times \frac{5}{8} =$ _____ 12

(13) $9 \times 3\frac{2}{3} =$ _____ 13

(14) $6\frac{1}{5} \times \frac{2}{3} =$ _____ 14

(15) $5\frac{1}{3} \times 7\frac{1}{4} =$ _____ 15

(16) $65\frac{2}{3} \times 14$ _____ 16

(17) $44.25 \times 4\frac{1}{5}$ _____ 17

(18) 493.5×6 _____ 18

(19) $54.3 \times .075$ _____ 19

(20) $6 \times 30\%$ of $30 =$ _____ 20

Sec. G. Score (number right)_____

TEST 4. SEC. H

These are problems in division. Write your answers above or to the right of each problem and also on the lines to the right.

(1) $5\overline{)45}$ _____ 1

(2) $5\overline{)50}$ _____ 2

(3) $6\overline{)366}$ _____ 3

(4) $5\overline{)525}$ _____ 4

(5) $33\overline{)8932}$ _____ 5

(6) $200\overline{)6000}$ _____ 6

(7) $37\overline{)3482}$ _____ 7

(8) $1 \div \frac{1}{2} =$ _____ 8

(9) $\frac{1}{3} \div 2 =$ _____ 9

(10) $7 \div \frac{3}{5} =$ _____ 10

(11) $\frac{3}{4} \div \frac{3}{4} =$ _____ 11

(12) $\frac{3}{5} \div \frac{1}{5} =$ _____ 12

(13) $5\frac{3}{4} \div \frac{3}{8} =$ _____ 13

(14) $6\frac{2}{3} \div 3\frac{1}{4} =$ _____ 14

(15) $160 \div 1\frac{1}{3} =$ _____ 15

(16) $4\overline{)9\ 2\frac{3}{4}}$ _____ 16

(17) $.02\overline{)8}$ _____ 17

(18) $3\overline{)8.04}$ _____ 18

(19) $.03\overline{).804}$ _____ 19

(20) $\frac{1}{2}$ of $12 \div \frac{1}{4}$ of $8 =$ _____ 20

Sec. H. Score (number right)_____

TEST 5. SEC. A

Directions: In these sentences draw a line under each letter that should be capitalized. Write the capital letters on the line to the right.

1. he did not know that the earth is round. _____ 1
2. Jack visited his friend paul. they went to a baseball game the first afternoon. _____ 2
3. The abbreviation for october is oct. _____ 3
4. woodrow wilson was born in virginia. _____ 4
5. *Little women* is the name of a book. _____ 5
6. The last Thursday in november is thanksgiving.
7. The capital of england is london. _____ 7
8. I stayed home on wednesday with aunt sally. _____ 8
9. Sally said, "will you go with me to the park?" _____ 9

Sec. A. Score (number right).....

TEST 5. SEC B

Directions: In the following story write in the commas (,) question marks (?) and quotation marks (") that are left out.

On the way back from a camping trip Ned and Sam met Jack who said Where have you been

We have been camping down by the river answered Ned. We fished hiked and swam.

Sam said "Ned saved my life too. I slipped off the bank into the river and hurt my arm. Ned yelled, Don't fight, so I turned over on my back and floated until he could help me."

Sec. B. Score (number right).....

TEST 5. SEC C

Directions: Draw a line under the correct word and write its number on the line to the right.

1. ([1] Don't [2] Doesn't) he want to go to the party? _____ 1
2. We ([1] were [2] was) at the game yesterday. _____ 2
3. She should ([1] have did [2] have done) her work at once. _____ 3
4. We were at the basket ball game last night where we ([1] saw [2] seen) some excellent playing. _____ 4
5. He should ([1] have gone [2] have went) to the theater last night. _____ 5
6. The book was not opened by ([1] she [2] her) or Anne. _____ 6
7. It was ([1] their [2] there) book that was lost. _____ 7
8. Mrs. Jones gave the sack of candy to her and ([1] I [2] me) _____ 8
9. We ([1] got [2] have) to go home. _____ 9
10. ([1]"May [2] "Can) we go to the party?" _____ 10

Directions: If the statements given below are complete sentences draw a line under the word **YES**. If not, draw a line under the word **NO**.

1. Working our way down to the valley. YES NO 1
2. The next morning we were up at daylight. YES NO 2
3. After watching carefully for about twenty minutes. YES NO 3
4. When we reached a position near the summit. YES NO 4
5. Damascus is said to be the oldest city in the world. YES NO 5
6. With its beautiful purplish blush. YES NO 6
7. With a faith that leads us to worship the specialist. YES NO 7
8. What is needed is training in application of the principles learned. YES NO 8
9. To the pupil who does not succeed there is something mysterious about percentage. YES NO 9
10. While there are some obvious social factors influencing man, and while there are some other forces of a more personal nature which help. YES NO 10

Sec. C. Score (number right).....

TEST 5. SEC. D

Read the following sentence:

We walk by the river nearly every day and watch other children sail boats which glide over the water.

Classify the words in the above sentence according to parts of speech and list them in the columns below.

Nouns	Pronouns	Verbs	Adjectives	Adverbs	Conjunctions	Prepositions

TEST 5 SEC. E

Sec. D. Score (number right).....

1.	.....	16.	.....
2.	.....	17.	.....
3.	.....	18.	.....
4.	.....	19.	.....
5.	.....	20.	.....
6.	.....	21.	.....
7.	.....	22.	.....
8.	.....	23.	.....
9.	.....	24.	.....
10.	.....	25.	.....
11.	.....	26.	.....
12.	.....	27.	.....
13.	.....	28.	.....
14.	.....	29.	.....
15.	.....	30.	.....

Sec. E. Score (number right).....

TEST 5. SEC. F

SEC. F. SCORE (See Manual).....